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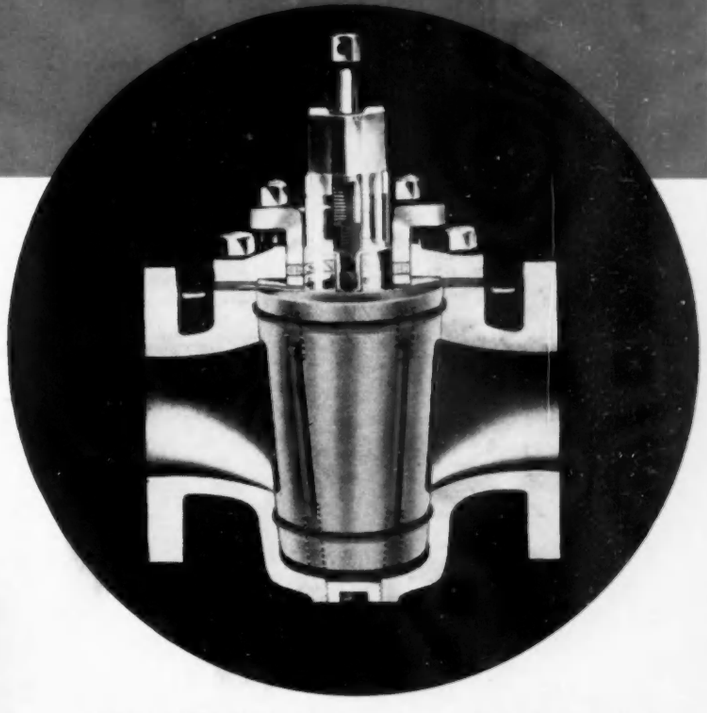

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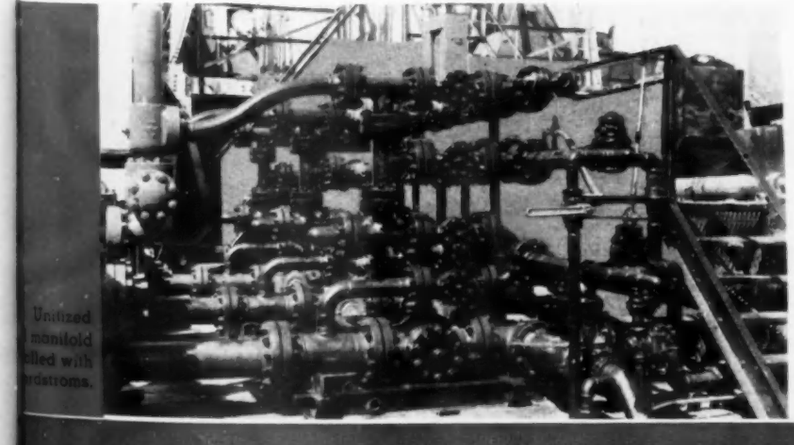

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LOOKING AHEAD
. . . with the Editor

RATED the most important addition to American crude reserves, and probably the most important discovery in the world, for 1945, the Rangely field, Colorado, constantly increases in significance. Known as a producing area since 1902 when a well was drilled into a productive section of the Mancos Shale at 800 feet, the district has undergone intermittent periods of development, with some success in shallow output.

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F. N. Bosco, engineer-geologist, and J. D. Brawner, geologist, consultants of Denver, have prepared a complete account of the field, including historical, operational, and geological details, an important contribution to the literature on Rangely. This article will appear in next week's issue.

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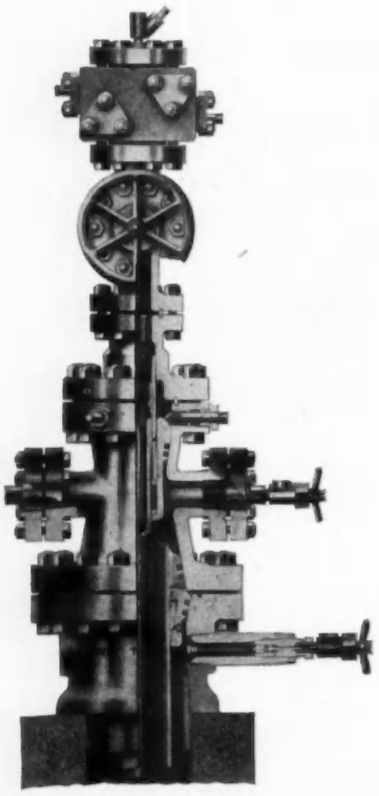

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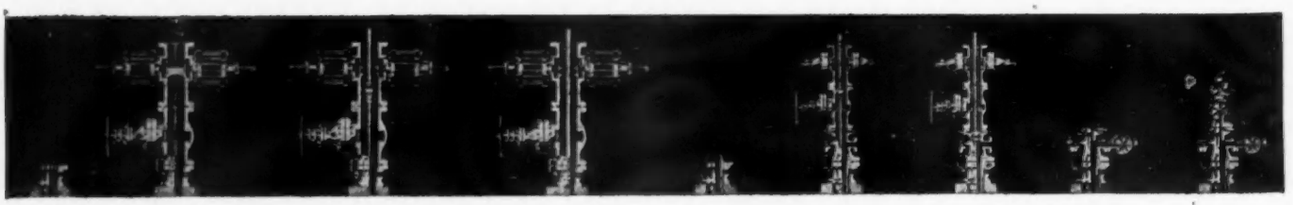

Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

The Outlook

House passage of the Case labor-control bill doesn't mean that it will become a law, and the legislation, if and when passed by the Senate, will be far less drastic. Many House members who voted for the bill did so with the realization of Senate opposition but as a warning to organized labor what it might expect if it did not restrain itself.

* * * *

The Anglo-American petroleum agreement and the $3.75 billion loan to England face a rocky passage through Congress, and in recognition of a broad anti-British sentiment in this country, little emphasis will be made of aid to Britain and stress will be laid upon the two pacts as necessary to the expansion and protection of our own foreign trade.

* * * *

Small businesses would find it difficult to become big business and the development of future "giants" such as General Foods, would be impossible if Congress enacts legislation long sought by the Federal Trade Commission, giving it authority to pass on any merger which would vest in one corporation the control of 5 percent or more of the total sales in its particular line of commerce and amending the Clayton Act to prohibit acquisition of one corporation by another through purchase of physical property or business assets, as well as through purchase of stock.

* * * *

Seven-eighths of all the cities in the country are facing difficulties in traffic handling once the flow of new automobiles begins. Major problems are those of downtown congestion, parking, turns, and truck loading and unloading. Traffic experts warn that unless these and other problems are solved, traffic in some areas in many cities will slow down to a walking pace.

* * * *

Successful use of alcohol by the War and Navy Departments as an auxiliary motor fuel in airplanes during the war, may soon be extended to commercial aircraft and possibly to motor trucks and passenger cars, providing a new market for the war-expanded alcohol industry. Other potential large markets lie in the fields of plastics and synthetic rubber.

* * * *

An expanded market for Alaskan petroleum will be developed if a program proposed by Harold Ickes to colonize the territory is put into effect. Ickes would open up Alaska to immigrants, to be accompanied by enough from the United States to insure the development of an American character, who would work for development corporations formed to exploit the territory's natural resources.

* * * *

The federal government anti-trust suit against American oil companies will be revived in the near future.

* * * *

Steel industry demand from oil companies and other operators is reaching a peak level with pipe deliveries being further extended. Pipe mills will be jammed with orders not only from the oil industry, but from the building trades. Some steel companies are said to be booked through the year on certain grades and sizes of pipe.

* * * *

The strikes are galling to Mid-Continent oil men. Some operators would like to shut down their production and go fishing. Oklahoma farmers near Chickasha already have held meetings protesting the strikes and propose to withhold their produce from the market until industry and labor can get together. "No work, no eat" is the farmers' motto.

* * * *

Research expenditures by private companies in the United States have risen to about $750 million per year during the war, according to government estimates, and this rate will be increased still further as soon as personnel is available.

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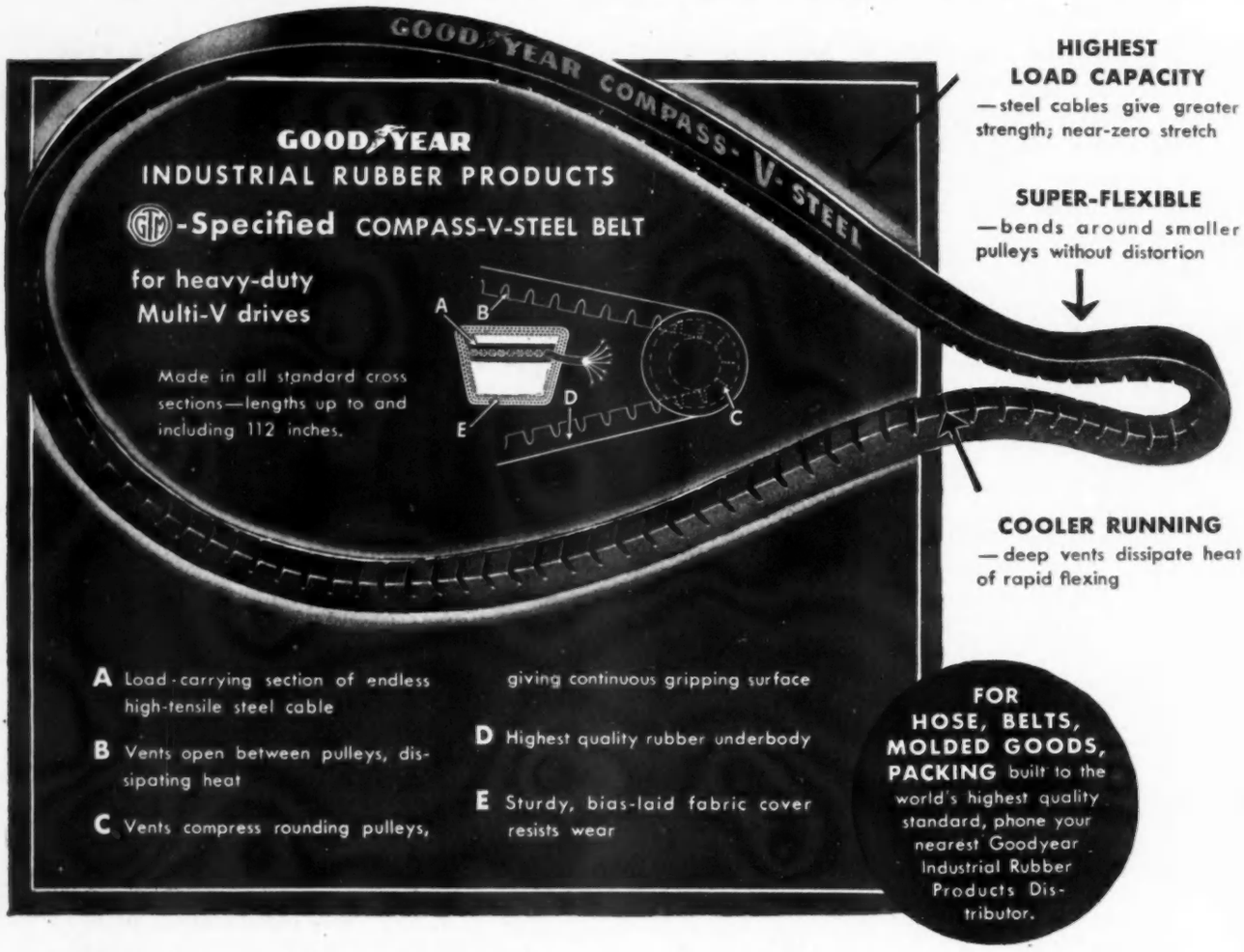
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The Changing Panorama

Russia Includes Oil In New 5-Year Plan

RUSSIA'S new industrial five-year-plan, as announced last week by Joseph Stalin, has as one of its objectives an annual output of 60 million tons (approximately 450 million barrels) of crude oil.

In order to reach this objective, the Soviet Union for the next five years will have to increase its oil production some 10 percent annually over the production of 300 million barrels during 1945 estimated by THE OIL WEEKLY in its Yearbook-Forecast Number (February 11, 1946—Page 101). Even after reaching its objective of 450 million barrels annually, Russia's yearly output of crude oil will only be about 35 percent of the production of the United States during 1945, the peak year in U. S. oil-production history.

The new production goal calls for increased oil prospecting in the USSR. According to Deputy People's Commissar of the Oil Industry, Evseyenko, hundreds of miles of pipe lines, new storage reservoirs and power stations will be built in Tuimszy, Kuibyshev (on the Volga).

Meantime, the *Petroleum Times*, London publication, declares that very little information regarding the oil industry's program included in Russia's 1946 plans and schedules for various industries is being made known by Moscow.

In commenting on such plans, the Moscow Radio said "very great difficulties are facing the petroleum industry in 1946 though, we trust, they will be overcome."

This statement "is held by some observers to confirm the impression of the past few weeks that Russia has adopted a new policy in her oil information service," the *Petroleum Times* says.

"For many months much detail was reported from Moscow in regard to new wells, prospecting for new fields and the like, but more recently there has been a notable absence of news in the Soviet services both for the interior and for abroad."

During the latter part of December, the Soviet News announced that the development of gas reserves for the Saratov-Moscow 450-mile big-inch gas line, has been completed with the opening of the No. 9 Yelchansk gas deposits.

Ickes Is Out

By RAY L. DUDLEY

HAROLD Ickes has resigned as Secretary of the Department of Interior and he did it in a manner characteristic of his stormy career. For 13 years an important figure in the Roosevelt and later the Truman administrations, he was at one time a man who aroused great fears on the part of the oil industry and later a man who was accorded sound admiration—even if much of the fear may have persisted—among many oil men.

We doubt if anyone has said harsher things about the "Old Curmudgeon" than this writer and based upon the situation at the time they were said, we think that they were well deserved. But having said the harsh things we are impelled by a spirit of fairness to give "The Little Secretary" credit where credit is due.

With his political thinking, and with many of his "hatchet man" actions, we were completely at outs, but Harold Ickes, heading the Petroleum Administration for War, did a job of which he and the American people can both be proud. When he was put at the head of the coordinated war effort we thought that he would be mentally and temperamentally unfit for the job. But he put his country above his political beliefs or prejudices and appointed a staff of thoroughly capable men—oil men who knew the business and who were as patriotically interested as Ickes in seeing the armed forces supplied with all the petroleum they needed. He did more—having appointed these men, he did not allow politics to dictate or interfere with their selection of assistants and subordinates. But he went further than this. Having selected his team, he gave the men the ball and told them to carry it. They did.

Such political interference as may have been attempted on PAW, did not, in our opinion, originate with Ickes. On one ticklish matter which has already been the subject of some testimony in a Washington hearing, we believe that Ickes backed up his staff even against the wishes of his chief, FDR.

He appointed an oil advisory board (PIWC) composed almost exclusively of men of an entirely different political belief than his, and when some of them rose up in meeting and in the plainest English criticized policies which they thought would not result in the greatest amount of oil for the country's needs, Ickes took the criticism, though some of it was bitter.

We know of no one thing in which he over-rode the recommendations of his staff of competent oil men.

The news from Washington appears to be that the Ickes' testimony in the Pauley hearings, plus his resignation, will deal a death blow to President Truman's appointment of the California oil man to the post of assistant secretary of Navy.

Certainly the Ickes resignation will not make Truman's job easier. It is our opinion that Ickes gained in stature in his resignation and that the President, who can ill afford attrition to his own stature, lost in the exchange.

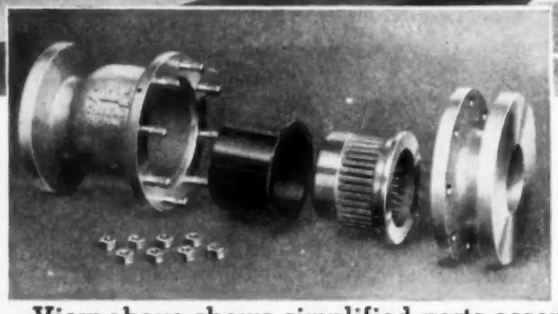
Pushed Around

SINCE June, 1937, the Oil and Gas Division of the Texas Railroad Commission has been housed in an old residence in Austin, which has been in poor state of repair and otherwise inadequate. Now this property has been sold and the division has been ordered to move within 30 days. An abandoned airplane hangar at Camp Mabry, four miles outside of Austin, has been suggested by the State Board of Control as quarters for the Oil and Gas Division.

The Tribune building, one of the most modern in Austin, is State-owned and a request has been placed before the Board of Control by the Railroad Commission for quarters in this building.

Certainly the Oil and Gas Division should be housed in quarters that meet its requirements, either in the Capitol Building or one nearby. The importance of the Division justifies this. It is said that money to buy the Tribune building came from the 3/16 cent-per-barrel tax on oil which is supposed to be used by the Oil and Gas Division of the Railroad Commission to finance the regulatory program. If this is true, there shouldn't be any question about the division having Tribune building space.

Operators attending the statewide hearing in Austin next Tuesday will have an opportunity to make their views on the matter known.



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The Week's News

SECRETARY of the Interior Harold L. Ickes resigned last week with an explosive declaration that he would not perjure himself for any political party. The episode pointed up what has been apparent for some time, that the New Deal was definitely discarded and a purely polictical administration was in the making. Story below.

Pauley Hearings Suspended—Meanwhile, hearings on the nomination of Edwin W. Pauley to be Undersecretary of the Navy, the definite basis for Ickes' resignation, continued suspended while party leaders brought the utmost pressure to bear on the California oil man to ask that his name be withdrawn.

Effects on Oil Legislation—Political observers saw in the Truman-Ickes rift serious effects upon oil legislation pending in Congress, The tidelands resolution and Anglo-American petroleum agreement, and predicted that anti-administration forces in Congress would not soon let the controversy die down. Story below.

Oil Price Discussions—The question of oil price control also came to the floor, as the House Banking and Currency Committee prepared to open hearings on continuance of the Price Control act, and oil interests sought an opportunity again to present their plea for higher prices. Meanwhile, the OPA was studying the report of the Crude Oil Advisory Committee, also recommending the elevation of the ceilings. Page 14.

Big Inch Disposal—To permit further hearings on proposals to acquire the Big Inch pipe lines for natural gas movement, Congress has before it legislation extending for 30 days the period in which disposition is prohibited. Page 13.

Motor Fuel Source—Department of Agriculture chemists are working on methods of converting farm wastes into motor fuel, claiming that 200 million barrels can be produced from the 100 million tons of farm residues available annually. Page 16.

Oil Import Hearing—Supported by members of Congress, industry men are seeking to book a hearing before the State Department on the question of oil imports before any steps are taken toward negotiation of new reciprocal trade agreements. Page 10.

FPC and Natural Gas—Mississippi added its weight of testimony, in the FPC hearing at Biloxi against additional federal control over the natural gas industry. Page 15.

Oil Industry Strikes—Several refineries have been "turned back to their owners by the Navy," but the steel strike continues and oil field equipment is being affected. Page 12.

Atomic Power—When?—A Bureau of Mines expert tells why wide industrial use of atomic power isn't likely, at least, not any time soon. Page 11.

Massachusetts Kept Out Of Tidelands Litigation

The Supreme Court last week restricted the tidelands suit to California, rejecting a petition to intervene filed by the state of Massachusetts.

In its petition, Massachusetts claimed the state would be vitally affected by the decision in the case and asked leave to participate in order to support aims to ownership of its own tidelands.

The court denied the application in an order without comment.

Ickes' Resignation as Interior Head Makes Washington Week a Lively One

With a blast that rocked the Capitol and left the Truman Administration seriously discredited, Secretary of the Interior Harold L. Ickes resigned from the Cabinet February 12, three weeks short of 13 years in office.

His lengthy letter of resignation was sent to the White House shortly before noon February 12, and was received there about three in the afternoon. At 10:30 the following morning, Press Secretary Ross announced the resignation had been accepted, effective February 15, and an hour later, with his wife seated beside him, Ickes told 300 news reporters why he was quitting.

"I don't care to stay with an administration where I am expected to commit perjury for the sake of the party," he declared.

"I never belonged to any party in any such sense as that, and I am too old to begin all over again."

Ickes said he had decided to resign February 7, when he read that President Truman said he might be "mistaken" in his report of an alleged approach by Pauley with a suggestion that if the government tidelands suit was not filed it would be possible to secure large campaign contributions from California oil men.

No man active in the oil business ought to hold a government job where he has to do with Government oil, Ickes said.

Ralph Davies Mentioned

Asked later if that would apply to Ralph K. Davies as well as to Edwin W. Pauley, whose nomination to be Undersecretary of the Navy was the cause of his resignation, Ickes said "I would not suggest the appointment of Mr. Davies as my successor, but he is qualified for any position in the government on the basis of character, ability and up-standingness."

Davies had been mentioned as possi-

Effects of Ickes' Resignation

Reverberations of Secretary Ickes' resignation will be long and widespread, possibly extending into the 1948 presidential campaign and definitely affecting many matters of current interest.

Among the immediate effects of his charges:

Chances of confirmation of Edwin W. Pauley as Under-Secretary of the Navy are at a low point, and the Senate Naval Affairs Committee has to make a choice between (a) reporting the nomination favorably and making possible a vocal field day for anti-administration forces in the Senate; (b) reporting it unfavorably and in so doing take issue wtih the President, who went "all out" for his nominee, or (c) refusing to report either way, letting the nomination die of inaction.

Chances of enactment of the tidelands resolution are less, with the Senate Judiciary Committee also faced with three courses of action: (1) Recommending passage, again giving opponents of the administration a chance to cry "oil scandal"; (2) recommending that action by the Senate be withheld until the Supreme Court has heard the issue or (3) holding the measure in committee until the heat is off.

The Anglo-American oil agreement faces rougher sledding, with Ickes testifying for it as a private citizen rather than a cabinet official. With various Texas interests against it, Foreign Relations Committee Chairman Tom Connally, who comes up for re-election this year, may be less willing to put his entire weight behind the pact.

Any reaction against the oil treaty may spill over against the proposed $3.75 billion loan to England, which will be subject to suspicion as the first of a series of advances to foreign countries, including Russia who is seen as using it to build up her military might.

ble successor of Abe Fortas as Undersecretary of the Interior, but is not believed to be receptive to the idea, although there is some uncertainty whether he will return to Standard Oil Company of California when he winds up his job soon as deputy petroleum administrator.

In his letter to the President, Ickes suggested that he stay until March 31 in order to steer the Anglo-American petroleum agreement through the Senate, where opposition to the proposed $3.75 billion loan to Britain may spill over into opposition against any form of treaty with England.

Ickes recalled that he had tendered his resignation July 6, 1945, effective the following August 31, and the President had asked him to stay on because he had no one in mind as a successor and "the office was a danger spot in the administration."

He told the President that at no time had he been advised that the latter proposed to nominate Pauley, but in view of rumors and anticipating the possibility of the nomination "I suggested to you on two or three occasions, as you will doubtless recall, that the administrative responsibilities with respect to petroleum that lie in the Navy Department be transferred to a commission consisting of the Secretaries of War, Navy and Interior. Your reply was that you had been thinking of doing this. Time continued to run and, not hearing from you further on this matter, I caused a suggested Executive Order to be drafted which I sent to you. The signing of this order would have removed this aspect of the question of oil so far as Mr. Pauley and the Navy Department were concerned. Unfortunately the order was not signed so that when Mr. Pauley's nomination went up, there immediately arose the question of the propriety of nominating an active oil man for a job that carried with it responsibility for government oil."

"Be Gentle With Ed"

Ickes said he learned indirectly that Pauley had told the President of his "probable" opposition to his nomination, and expressed surprise that Truman "did not frankly ask me what might be the basis of such opposition."

Questioned on this point at his conference, Ickes said that when he told the President he had been asked to testify at the Pauley hearings before the Senate Naval Affairs Committee, the President still did not ask the basis of his opposition, but said "You must tell the truth, of course, but be as gentle as you can with Ed Pauley."

"I thing that the record will show that I did everything that I could in behalf of Mr. Pauley except to foreswear myself," Ickes said in his letter.

Actually, Ickes volunteered nothing to the committee and, in fact, "smoke screened" Pauley to some extent by seizing on and expanding Senator Tobey's questions about the building of a 100-octane refinery in Mexico by criticising Max Thornburg, former petroleum adviser to the State Department, and it was only when Tobey asked flatly whether Pauley had approached him with relation to the tideland situation that, admonishing the committee that the question was embarrassing, he said "the answer is yes."

"On Thursday February 7 you definitely aligned yourself with Mr. Pauley as against me, thus making my position as a member of your Cabinet untenable," Ickes continued in his letter. "Of course this was your privilege but, if I may, I should like to question the propriety of your saying that I had not consulted you in advance of my testimony with respect to Pauley and particularly of your statement that 'Ickes can very well be mistaken as well as the rest of us.'

"It seemed to me clear from what you said at this press conference that you had prejudged this case without giving me a chance to be heard. In any other circumstances that I can conceive of, I would have considered it my duty to continue in my present post until the issues had been finally determined. In the circumstances I see no such duty. On the contrary I feel that as a matter of principle it is clearly my obligation to submit my resignation now."

When the Pauley hearings are resumed, the retiring secretary told news correspondents, "I will be a free man once more and can say what I please when I please."

Ickes vs Pauley

Ickes told the President sternly that he erred in saying he could have been "mistaken" as to Pauley's efforts to fend off the tidelands suit.

"My feeling is that, since you were not present at the hearing and presumably had not read the record, it was not proper for you, even though you be the President of the United States, to pass judgment on a question of veracity between Mr. Pauley and myself," he wrote.

"After all, I am a member of your Cabinet at your own request and I do not have a reputation for dealing recklessly with the truth. On the question of veracity as between Mr. Pauley and myself, I am ready to appear before any competent tribunal at any time, although of course I should want one that would not announce, or even form, its opinion in advance of a full and careful consideration of all of the evidence.

"As to whether I had or had not consulted you in advance of my testimony on the Pauley nomination, my reply is that you had full notice of the probability of my embarrassment, plus several opportunities, in addition to those that you might create at will, to ask me the reason why I might oppose him. After all, one may not thrust his unasked advice upon the President of the United States and I did not feel that I could go further than to indicate to you, as I clearly did, that I as willing to talk to you about Mr. Pauley, although, of course, you did not need such an affirmative assurance."

Asked at his conference whether the nomination had not been discussed at a cabinet meeting, Ickes asked in return "what Cabinet meeting?" If it was so discussed, he said, "I wasn't there."

Always Be on Guard

Ickes told the President why he was "shocked" by Pauley's suggestion of liberal campaign contributions if the government would forego whatever claim it might have to the California tidelands, and warned that the situation had all the potentialities of another Teapot Dome scandal.

"Above all departments," he wrote, "the Department of the Interior must always be on guard against any association of money with politics, and even overzealous, by the standards of some men, in defending the government's legal proprietary rights.

"The forces that ruined Secretary Fall will always be playing upon anyone who is Secretary of the Interior. It is not now certain that other departments will be immune to similar sinister pressures. And the forces that ruined Secretary Fall because he made the mistake of deciding that, politically, he had to yield to them, will always be seeking to oust or to discredit any secretary who will not surrender to them.

"Always, in one form or another, they will be urging (a) that because of what it has to give out of the public treasury, the Department of the Interior can be made a flush source of money for use in politics, and (b) that a secretary who insists upon protecting the public domain, as if it were his own property, from the encroachments of men politically and acquisitively ambitious, is an intolerable scold and a brake on progress.

"The incapacity to resist this kind of political pressure spiritually wrecked the Republican party in the days of Secretary Fall long before its debacle in 1932. And so, as I leave the department, I feel that I ought to warn you of a cloud, now no bigger than a man's hand, that my experience sees in the sky."

The same evening, Ickes made a coast-to-coast broadcast, again reviewing the situation, in which he suggested that the Attorney General assign one of his "ablest lawyers" to scrutinize Pauley's testimony before the committee.

State Department Urged to Hold Oil Import Discussion

Pressure is being brought to bear on the State Department to call a conference on oil imports before undertaking any revision of the reciprocal trade agreements.

The move has been given the support of Chairman Clarence F. Lea of the House Interstate Commerce Committee who, at the suggestion of IPAA officials has written to Secretary James F. Byrnes, urging that such a meeting be called.

"The need of establishing a definite policy as to the development, acquisition and distribution of petroleum products is one of the major problems of the nation and of the world," Lea said. "It is of great importance that the policy of the government shall be carefully and prudently established. Every interest concerned should be considered before a decision is reached.

"I believe this is a very appropriate time to call such a conference for the full consideration of policies that may be established by the government in its relation to these problems."

Atomic Energy—Not Tomorrow

Much of the current talk concerning the utilization of atomic energy industrially borders on the fantastic, it was declared last week by Walter Janssen, Department of Commerce consultant on metals and minerals.

Without decrying the possibilities of atomic energy which may some day be developed, Janssen pointed out that uranium is both costly and rare. To compete with gasoline at 30 cents a gallon, it would be necessary to produce U-235 at a price of $75,000 a pound and to get on equal terms with eight-cent fuel oil it would have to be brought down to $20,000, he said.

Janssen said there is enough uranium—no matter how little it may be—to be used as an instrument of destruction, but "if this amazing source of energy is to be a boon to mankind, then the reserves known and yet to be discovered, no matter how large, will be all too rare."

While uranium is widely distributed through the earth's crust, it is far from abundant and known deposits of economic worth are located remote from refineries and markets.

He also made public the President's brief acceptance of his resignation, remarkable for the omission of any mention of the services Ickes had rendered, and his sarcastic reply of "appreciation" of the "generosity and graciousness" of the President, who had given him two days in which to clear his desk of the accumulation of 13 years.

None of the correspondence was made public by the White House, which usually releases letters of resignation and the complimentary acceptance.

"What particularly appeals to me," Ickes told the President in his final shot, "is your statement 'I also consider that this (my resignation) terminates all of your other governmental activities.'

"You will pardon me if I remark that this is in the nature of supererogation. I assure you that I have had no secret design, having resigned as Secretary of the Interior, to hold on to any other office under your jurisdiction."

List of Probables

Pending appointment of a successor, Oscar Chapman, assistant secretary, will take over the department. Mentioned as possible successors are Senator Joseph C. O'Mahoney of Wyoming, chairman of the Special Senate Petroleum Committee, and former Senator D. Worth Clark of Idaho, prewar isolationist who was defeated for re-election in 1942. Also suggested are Governor Robert S. Kerr of Oklahoma, whose friends say they will advise against taking the job, and Representative Harry R. Sheppard of California, who reportedly has been angling for it.

With the going of Ickes, President Truman lost a large part of his cabinet. The work horse of the administration, Ickes held a host of jobs in addition to his cabinet post and had been trouble-shooter for President Roosevelt through his administration, acting as head of the Public Works Administration, where his careful watch over the billions of dollars spent prevented any scandal; petroleum administrator in the days of the National Recovery Administration, and prime mover and negotiator of the Anglo-American petroleum agreement.

Distrusted by the industry in the early days of his tenure because of his insistence upon oil conservation, he won the respect of oil men for his handling of the industry as Petroleum Administrator for War.

More recently, he has been concerned over the declining productivity of oil exploration and was a strong supporter of the O'Mahoney bill under which the Bureau of Mines is investigating the economics of synthetic oil production.

Russia Asking U. S. for Considerable Bunker Oil

Russia is asking American bunker C fuel oil at the rate of 500,000 barrels a month, it was disclosed last week by Arthur Paul, director of the Commerce Department's office of international trade operations.

Paul disclosed that his office has issued licenses for the export of that volume during February and now has before it an application for a similar amount to be shipped in March. These shipments, he said, are not out of line. But are "a continuance of the flow that has been going on all the time."

It was explained that the office has nothing to do with the decision of the amount of oil to be exported, which is made by PAW, State Department, Office of Reconversion and the War and Navy departments, but acts merely in a mechanical capacity.

Need Is Critical on Coast For Special Navy Fuel Oil

Urgent need of the Navy for additional supplies of Navy special fuel oil on the West Coast brought from PAW last week a telegraphic request to 11 California oil companies for immediate reports as to what additional quantities of Navy fuel in excess of present commitments can be supplied up to April 30, and the approximate increases in prices to apply on such incremental production.

Deputy Administrator Ralph K. Davies asked the companies to report the means by which they would expect to accomplish the additional production—whether by running additional crude, changing yields, or otherwise. The need is critical, Davies said.

Information is needed, he explained, so that PAW can develop definite plans with other agencies concerned, to meet the Navy's needs.

Well Logging Course Planned by Texas A. & M.

A special short course on well logging will be held March 11-15 at the Texas A. & M. College, College Station, Texas, according to an announcement by Harold Vance, head of the petroleum engineering department. Lectures have been scheduled in the Petroleum Engineering Building as follows:

March 11, 1:30-5 p. m.—"Well Logging Problem," Hubert Guyod, well logging consultant, Houston. "Radioactivity Logging," John Campbell, Lane-Wells Company, Houston.

March 12, 9-12 a. m.—"Caliper Logging," H. C. Waters, Halliburton Oil Well Cementing Company. 1:30-5 p. m. —"Geochemical Logging," Leo Horvitz, Horvitz Research Laboratories, Houston. "Permeability Logging," L. S. Swan, Dowell Incorporated.

March 13, 9-12 a. m.—"Electrical Logging," Hubert Guyod. 1:30-5 p. m. — "Mud Logging," B. O. Pixler, Baroid Sales Division. "Mechanical Logging," P. B. Nicholls, Cities Service Oil Company, Oklahoma City.

March 14, 9-12 a. m.—"Dip Determination," E. S. Stratton, Schlumberger Well Surveying Corporation. "Electric Log Interpretation," Hubert Guyod.

March 15, 9-12 a. m.—"Temperature Logging," Hubert Guyod. Concluding talk, Hubert Guyod.

In addition to the talks, field demonstrations will be given as follows: electrical and caliper logging by Halliburton and radioactivity logging by Lane-Wells.

A round-table discussion will be held each evening, 7:30 to 9 o'clock on the subjects covered during the day's proceedings.

Texas Gulf Producing Purchases Oil Properties

Production in Texas, New Mexico, Oklahoma, Kansas, Illinois and Michigan will be transferred in a deal which last week was given approval by SEC. Texas Gulf Producing Company, jointly with Bradley Producing Company of Wellsville, N. Y., bid $2,651,110 for the capital stock of Ohio Fuel Supply Company of New York. The transaction is being completed by Columbia Gas & Electric Corporation which notified SEC of the proposed sale.

Texas properties of the Ohio firm include 80 acres in the Seeligson field.

Anglo-American Oil Pact Hearings Set for March 4

Prolonged sessions of the World Security Council will delay hearings on the Anglo-American petroleum agreement scheduled February 15 until at least March 4, Senator Walter F. George of Georgia, acting chairman of the Senate Foreign Relations Committee, has announced.

George expects that Senator Tom Connally, chairman, will have returned from London by the new date, but if not it will again be put off.

Strike Continues But Houston Plants Operate; Navy Turns Back Refineries

Hughes Tool Company and Reed Roller Bit Company Houston plants were operating last week and reported increasing numbers of employes coming back to work. At the Hughes plant, a third shift was started, made necessary by the additional workmen reporting each day.

The Reed company which asked its men to come back to work on Monday, of last week, declaring that its contract with the CIO was cancelled, stated that 537 employes had reported Friday.

Any optimism about settlements of these strikes following President Truman's announcement on the over-all wage problem, seems ill-founded. Both Hughes and Reed are of the same opinion that a "big steel" settlement will not apply as a basis for handling their disagreements with the union, since neither of the companies is a basic steel company.

Effect of Steel Strike

Noah Dietrich, executive vice president of Hughes, stated that the company's refusal to meet union demands is because "The White House does not propose to use the same wage formula for manufacture of steel products such as Hughes, as the CIO demands."

S. P. Farish, president of Reed Roller Bit Company agreed with Dietrich. "A settlement of the 'big steel' strike will not mean a settlement on the same terms at Reed," he said. "Such a settlement with 'big steel' will increase steel prices, which will mean an increase in the cost of our materials. Reed has an individual problem and the wage settlement must be on the basis of conditions at this individual plant.

"The company has made a fair offer of settlement to the union. Although the union has not accepted this offer, the company is nevertheless going to apply to the national wage stabilization board for approval of this wage increase."

Both plants are picketed. Houston police list four automobiles set on fire while they were parked in front of the Hughes plant, cars that belonged to employes who are members of the independent union at Hughes, and who have gone back to work since the strike was called by the CIO.

As far as the oil industry is concerned directly, the strikes at Hughes and Reed are the most serious since these concerns supply a high percentage of the rock bits used in drilling. However, numerous other concerns affected in the Houston district supply various oil industry equipment items and curtailed production by them will soon be felt in the oil fields.

Taking the Houston district as a whole, inventories of certain types of steel are sufficient for as long as 90 days. With other items the pinch of short supply is already being felt, and will become critical within possibly two or three weeks. Companies are trying to plan operations so that as one item becomes scare or disappears from stock, workmen can be shifted to other jobs where operations can be consolidated. This is merely a makeshift expedient however, to try to keep from laying off men, but it cannot be continued for any great length of time. A number of companies have stated that they would have to begin laying off men progressively within from three to four weeks if the strike goes on that long.

It is impossible to estimate to what extent production of oil field equipment already has been reduced but it is obvious that the momentum of output has been slowed down appreciably, however, and some time will be required to regain the normal scale of operations, even after the strike is settled. About ten days will be necessary to bring steel mills back to full production, and to this will have to be added the time it takes to ship steel stocks to various distribution centers. In the Houston district, this will mean anywhere from 10 days to two weeks and longer.

Voluntary rationing of rock bits was reported by supply houses in Oklahoma. In an effort to make the bits last until the steel strike is ended, contractors are co-operating with suppliers by taking only enough bits to meet requirements.

Casing is becoming short in some Oklahoma areas, the suppliers reported, but it is not yet serious. There is no shortage of drill pipe in the area.

Refinery Strikes Settled

The Navy announced settlement of six more refinery strikes last week, including The Texas Company plant at Port Neches, Texas. This refinery was returned to its owners on February 15. The other five plants were: Standard Oil Company (Ohio), Cleveland; Socony Vacuum Oil Company, Trenton, Michigan; National Refining Company, Findlay, Ohio; Union Oil Company of California, Wilmington, California.

About 4524 employees were involved at the six plants which have been in operation by the Navy since last fall.

Fischer-Tropsch Patents Being Offered in U. S.

The Alien Property Custodian is offering for licensing a group of patents relating to the production of synthetic gasoline by the Fischer-Tropsch process seized from their German owners during the war. The licenses will be made available on a royalty-free, non-exclusive basis, with an administration fee of $15. each, the only cost involved. Several of the patents, it was explained, cover inventions of Franz Fischer, a pioneer in synthetic fuel chemistry. Their licensing has been delayed until now because of the necessity for disposing of claims to exclusive licenses.

Gas Value Fixed

A new precedent in fixing the tax on natural gas in Texas was established last week by a ruling of the state comptroller who after a hearing found that the value of sour gas produced in Moore and Hutchinson counties, Texas, by Sinclair Prairie Oil Company was 1.7 cents per thousand cubic feet and that the tax should be levied on this basis.

This gas is not actually sold and for that reason the sales price could not be used as a standard of value. The price is based on the value of the products derived from the gas.

Foreign Guests at Houston

Houston Chapter Nomads, together with their international guests, at a recent gathering, are shown above, left to right as follows: Front row—Bob Holden, The Texas Company, Colombia; H. C. Tung, Kansu Petroleum, Kansu Province, China; Rudolfo Fernandez, Petroleos Mexicanos chief of purchases, who recently has located in Houston; Bob Horton, Link-Belt Company; C. B. McDonald, A-1 Bit and Tool Company. Back row—E. F. Baldwin, Hughes Tool Company; Fred Briggs, The Texas Company, Colombia; Bob Kuss, Gulf Oil Corporation, Venezuela; I. V. Rollins, Standard-Vacuum Oil Company, Venezuela, and E. F. Hulsman, Shell Oil Company, Venezuela.

FPC Told of West Coast Need for Texas Pipe Line

Need for the construction of a 1200-mile pipe line from the Permian Basin, Panhandle and Hugoton fields in Texas to California in anticipation of a declining natural gas supply on the Pacific Coast was stressed at initial hearings before FPC February 13 by representatives of El Paso Natural Gas Company, Southern California Gas Company and Southern Counties Gas Company of California. The situation will be explored in more detail in hearings to be held in Los Angeles.

The commission was told that by the time the line is completed next year there will be a market for the 125 million cubic feet of gas which it is planned to move initially, and that the deficiency in California production will increase steadily during the next few years to more than 305 million cubic feet maximum capacity for which the system has been designed.

The project will cost the El Paso company more than $51 million and calls for construction of 1000 miles of 24 and 26-inch pipe line from a point near Dumas, Moore County, Texas, to the California-Arizona state line. The initial capital cost for 125 million cubic feet per day delivery was estimated at $27,822,000, with another $9,365,000 to increase it to 175 million cubic feet and a final $14,038,000 to bring it to maximum capacity.

The gas will be taken at the state line by the two California companies, who are to build a 214-mile 26-inch line to a point near Santa Fe Springs, where a connection would be made with a line extending to Los Angeles. The initial cost of the line, which is to have a daily capacity of 175 million cubic feet, would be $12,140,000, with another $3 million required to bring it to maximum capacity of 305 million cubic feet daily.

FPC Is Asked for Permit For Arkansas Pipe Line

The Arkansas Louisiana Gas Company last week asked the Federal Power Commission for authority to construct approximately 26 miles of 3⅝ and 12¾-inch pipe line in Arkansas to permit it to serve four industrial consumers and a crossing of the Arkansas River which was constructed in December to take advantage of favorable river stages.

The company also sought authority for the continued operation of its so-called "L system" pipe line, constructed in 1942 to meet the war emergency.

IPAA Staff Enlarged

The Independent Petroleum Association of America has added three new members to its staff to represent IPAA interests in North and West Texas, the Oklahoma area, and the Illinois-Indiana sector.

Wayne P. Campbell has been assigned to the Illinois-Indiana sector, Ted A. Smith to the North and West Texas sector, and G. W. Michaels to the Oklahoma sector.

Gas Proposals for Big Inch Lines To Be Heard Within Three Weeks

Further hearings on the Big Inch pipe lines are due to be held ithin the next three weeks to give representatives of groups which propose to acquire them for natural gas use an opportunity to present their views on the report submitted by the Surplus Property Administration which held that conversion for gas movement would not be desirable from the standpoint of possible use of the systems for oil in the event of another emergency.

To give Senator Joseph C. O'Mahoney's special oil committee an opportunity to go further into the matter, a resolution was introduced in the Senate by Senator Burnet R. Maybank of South Carolina providing for a 30-day extension during which the disposition of the lines is prohibited under the Surplus Property Act. The Senate approved and it imediately was sent to the House for concurrence.

March 15 Date Set

The resolution gives Congress until March 15 to act on the recommendations of the SPA that the Big Inch lines be sold or leased, if possible, and operated by the government if they cannot so be disposed of, with their conversion to natural gas permitted only if the lines cannot be kept in petroleum service and adequate provision is made for protection of the national security.

The only offers disclosed so far contemplate acquisition of the lines by one of three groups, two of which are almost identical, for the movement of natural gas to the New York-Philadelphia area on terms calling for concessions by the government in the way of a congressional certificate of necessity, (to by-pass the FPC) and in financial arrangements. So far as can be learned, these offers have never been placed before RFC in definite terms.

The SPA suggested that if the lines cannot be sold or leased in their entirety, they could be segmented and parts of them, at least, used for oil transportation toward the Middle West, but leaned heavily toward the idea of government operation as common carriers if they cannot be kept in oil service in any other way.

Conversion to gas was opposed, not only because of the serious effect it would have upon the Eastern coal, railroad and other industries, but because of the practical impossibility of re-converting them to oil in the case of an emergency, once they have been tied into the boiler rooms of the major industrial plants which also would be urgently required it we became involved in another war.

Texas Commissioners Still Oppose Gas Plea of Mexico

Two members of the Texas Railroad Commission, Beauford Jester and Chairman Olin Culberson, have asked FPC to re-open the LaGloria Corporation gas exportation case because a $14 million hydrogenation plant for making gasoline is planned for Brownsville, Texas. LaGloria is asking to send gas from the La Blanca field to the Mexican border where Reynosa Pipe Line Company would carry it to Monterrey.

FPC once turned down the application upon testimony, among others, of Culberson and Jester. In December a rehearing was granted without the Texas commissioners participating. Their opposition is based on grounds that such exportation will hinder industrial growth of Texas and doubtless one of the industries which they think might be damaged is the new plant at Brownsville, which would use 60 million cubic feet of gas daily.

Jersey Technical Groups Merged After Ten Years

Standard Oil Development Company, central technical organization of Standard Oil Company (New Jersey), last week announced consolidation of its two engineering departments, bringing into one organization more than 400 scientists and other employes of the general engineering department and the process engineering department which have operated independently for nearly 10 years. The new organization, named the Esso Engineering Department, is directed by E. W. Luster, chief engineer, who reports to Dr. N. E. Loomis, vice president in charge of engineering.

The regrouping, Loomis said, is expected to place greater attention on mechanical engineering and engineering research work, improve work supervision and increase efficiency. The department's activities also will be expanded to cover not only refining, but certain phases of producing, pipe line, shipping and marketing activities.

Other objectives of the consolidation include better coordination of technical work, faster handling of approximate designs and estimates, expansion of the process test division to include testing of mechanical equipment, and greater attention to mechanical engineering economics.

E. H. Barlow, former chief engineer, becomes consulting engineer of the development company. Assistants to Luster are P. J. Byrne of the Process Engineering Department; C. E. Paules of the General Engineering Department, and N. F. Myers, former associate manager of the process division.

C. T. Harding is named chief process engineer, C. F. Hesselbach, chief mechanical engineer, and A. J. Ely, chief construction engineer. A group of project engineers including G. W. Bauer, E. H. Clendenin, P. J. Harrington, C. A. Hillman, E. H. Kares and J. R. Schonberg, will serve as coordinators on major projects.

Advisory Group Makes Price Report; IPAA Asks Federals Take Hands Off

Recommendations that the ceiling price of oil be increased and that replacement cost be considered in dealing with the problem were laid before OPA last week by the National Crude Oil Industry Advisory Committee.

Members of the committee agreed to say nothing until the OPA had had a chance to study the recommendations, and OPA officials said they were reviewing the document, written after a year's study of industry data and statistical and cost figures for prewar and war periods prepared by the OPA.

Charles F. Roeser is chairman of the committee which was appointed January 3, 1945, to consider the problem of crude oil pricing. It undertook its analysis of OPA data on December 12, last.

The report will support the previous position taken by the industry, and it is probable that an increase of some 50 cents a barrel was recommended. PAW Administrator during the war called for an increase of 35 cents, but it was said that rising costs since V-J Day have made that figure inadequate.

Top IPAA officers meeting in Washington February 8, called for the immediate release of oil from price control by Director of War Mobilization and Reconversion John W. Snyder in accord with a promise in his recent report to lift all price ceilings "as quickly as supply approaches balance with demand."

"In that quoted sentence is the promise of government to take its hand off the oil industry's economics," President B. A. Hardey of Shreveport, La., said. "Since the war ended our supply does exceed demand and no shortage of oil is probable in the foreseeable future. No one disputes this fact.

"If price controls are continued, however, shortages might eventually be brought about. The oil producers must be encouraged to search more diligently for new fields. Every element of the industry has said so and the final words of the PAW were in that vein. Such diligent search cannot be conducted unless a reasonable increase in the crude oil price is made. The OPA has refused for almost five years to pay attention to the increasing distress of the domestic producers. It is time for this condition to be corrected."

Thompson Foresees a Cut In Texas March Allowable

Railroad Commissioner Ernest O. Thompson last week predicted that Texas allowables for March should be reduced 300,000 barrels daily. Even that cut, Thompson said, might not be sufficient. He thought the higher ratio fields probably should be cut first "so as to prevent avoidable waste of gas.

"We are presently producing too much oil in Texas," Thompson said. "The demand seemed to be real and firm when presented at our statewide hearings the past three months. But closer examination now reveals that the real demand was for heating oils, kerosine and fuel oils. The tremendous increase in stocks of gasoline shows that there has been refined more gasoline than the market demands. Gasoline stocks are now in excess of 100 million barrels . . . "

Thompson thought February's allowable of 2,235,191 barrels should be cut 300,000 daily or an allowable of 1,935,191 daily for March which he explains "with the normal underage in actual production as against permissive allowable production this would mean about 1,700,000 daily."

Thompson said that it is entirely possible a still further reduction would have to be made in the April allowable "if production is to be kept in line with consumptive demand."

Recent cuts in the price of gasoline "is the normal price reaction to an overburdened market," he said, pointing out that "oil has not been permitted to go up in price but if an over-supply is allowed to be produced, there is nothing to prevent crude prices from dropping.

Helium Production

In the first report on helium production since Pearl Harbor, Secretary Ickes last week disclosed that in the last five fiscal years 370,787,000 cubic feet of the gas was produced, or more than 37 times the 10 million cubic feet which the Nazis attempted to buy here in 1938.

As a result of 25 years of research by the Bureau of Mines, it was declared, the cost of the gas was considerably less than one cent per cubic foot as compared with about $2500 a cubic foot when the bureau first began production.

THE OIL MAN'S CALENDAR

FEB. 19	FPC Gas Hearing, Chicago, Circuit Court of Appeals Room 4.
25–28	AIME Annual Meeting, Chicago, Palmer House.
MAR. 2	North Texas Oil and Gas Association, Annual Meeting, Wichita Falls, Texas.
21–22	Southern Gas Association, Galveston, Hotel Galvez.
APRIL 1– 2	Society of Exploration Geophysicists, Annual Meeting, Chicago, Stevens Hotel.
2	FPC Gas Hearing, Charleston, W. Va., State Capitol.
2– 4	American Association Petroleum Geologists, Annual Meeting, Chicago, Stevens Hotel.
8–10	Mid-West Gas Association, Annual Convention, St. Paul, Minn., St. Paul Hotel.
11–12	Pacific Coast District, Production Division API, Spring Meeting, Los Angeles, Biltmore Hotel.
11–13	Quarterly Meeting, Interstate Oil Compact Commission, Tulsa.
17–19	Natural Gasoline Association of America, Annual Convention, Dallas, Baker Hotel.
18–19	National Petroleum Association, Semi-annual Meeting, Cleveland, Ohio, Hotel Cleveland.
29–30	And May 1, Independent Petroleum Association of America, Mid-Year Meeting, Houston, Rice Hotel.
MAY 7– 8	American Gas Association, Natural Gas Dept., Cincinnati, Hotel Gibson.
7– 9	National Association Corrosion Engineers, Kansas City, Missouri, President Hotel.
23–25	National Oil Scouts and Landmen's Association, Annual Convention, Jackson Mississippi, Hotel Heidelberg.
28–29	American Petroleum Institute, Directors' Meeting, Fort Worth.
JUNE 13–14	Eastern District, Production Division API, Spring Meeting, Pittsburgh, Pa., William Penn Hotel.
NOV. 11–14	American Petroleum Institute Annual Meeting, Chicago, Stevens Hotel.

Oil Prices to be Aired Again When House Committee Starts Hearings

Another fight over oil prices is scheduled to take place before the House Banking and Currency Committee this week when it opens hearings on extension of the Price Control Act for another year from June 30.

Independent operators have asked the Committee for "ample" time in which to develop their thesis that a raising of the crude ceiling cannot longer be delayed without seriously impeding exploratory work, no longer under the lash of war necessity.

Testimony of Price Administrator Chester Bowles before the House Appropriations Committee, released last week, disclosed that the OPA sees no chance of lifting price controls on consumer goods for many months and believes that control of industrial output will have to be continued until the end of June 1947.

With respect to petroleum, the OPA position was indicated by Stabilization Director John C. Collet in his decision January 31 to continue the stripper-well subsidy. That decision was based on discussions with officials of OPA and other interested agencies, and indicated definitely the necessity of maintaining the subsidy so long as prices are controlled; while the continuance ran only to June 30, the date was based on the presently authorized life of OPA.

OPA's viewpoint was reflected in Collet's explanation that withdrawal of the subsidy would precipitate an "intense" demand for substantial increases in crude ceilings and "a rise in crude oil prices would require a reorganization of the price structure for petroleum products which would be likely to cause an increase in the cost of living highly detrimental to the stabilization program."

Mississippi Joins Other States in Wanting Federal Hands Kept Off Gas

On the basis of the testimony the Federal Power Commission has heard from the major natural gas producing states of the Southwest and South, that agency must report to Congress that those states bitterly oppose any additional federal control over the natural gas industry.

The FPC on February 11 and 12 heard representatives of the State of Mississippi join practically all of the other major producing states in urging that the federal government keep hands off natural gas production, gathering or conservation. It was the same theme which the commission, during its natural gas investigation hearings has heard from Kansas, Oklahoma, Texas, Arkansas and New Mexico. Only one state—Louisiana—disagreed, that state urging that the FPC restrict the exportation of natural gas from that state.

It is with this background of testimony from the producing states of the Southwest and South that the FPC will turn to the consuming areas of the Middle West and East to receive testimony from the consumers as to their ideas on whether or not the natural gas act should be amended, and if so in what respects. The commission opens the consumer hearings in Chicago on Tuesday, February 19.

Mississippi, like its sister producing states, except Louisiana, protested any federal control over use or any effort to restrict the exportation of natural gas, on the theory that such restrictions would limit markets and this would result in keeping well-head prices low through a surplus of available gas on the market.

Amendment Discussed

It also followed the other six states in urging that if the FPC had any doubt as to the proper interpretation of the Natural Gas Act, it might be wise for Congress to amend the act so as to make it clear that FPC jurisdiction is restricted only to interstate matters. This was brought out by Mississippi's Governor Thomas L. Bailey, who said:

"I wonder if your difficulties would not be lessened and the public interest served best if the Natural Gas Act were amended so as to make it clear that your jurisdiction does not include any phase of producing and gathering operation, field prices, or end use?"

Mississippi has come to be of importance in the oil and gas field only in the relatively recent past. Even now it is not known just what the potentialities of the state are in this regard, but more and more the industry is becoming interested in Mississippi and there is a strong belief that she will prove to be one of the big producers.

This possibility was indicated in the testimony of H. M. Morse, supervisor of the State Oil and Gas Board, who in his prepared testimony said that "a most conservative estimate" of the state's remaining recoverable gas reserves, made as of January 1, 1946, indicates that the figure would be 859,827,490,000 cubic feet. However he departed from his prepared text to point out that since that estimate was made, several recent discoveries have been made which indicates that the figure he gave should at least be doubled.

Subsequently, under questioning by Burton Behling, chief of the FPC investigation staff, he said that in view of the fact that most of the state's fields have not been sufficiently explored to permit them to be well defined, an "optimistic" estimate of the state's present reserves would be some three trillion cubic feet.

Governor Bailey was unable to attend the hearing because of duties in connection with a session of the state legislature, but his prepared statement was read into the record by William Fontaine, assistant Attorney General of the state.

He declared flatly that the FPC should not have the authority to regulate any of the natural gas, and that Mississippi wants to send its gas to any markets because "from all present indications we will have ample quantities for ourselves and to sell for a good long time to come.

"I do not think it wise," he said, "to delegate to any administrative agency the power to determine what is the better use of any energy resource today, tomorrow, one year, or ten years hence. We live in a dynamic and not a static world. What is a superior use today might easily be an inferior use six months from now.

"It is inevitable that end-use control cannot be limited to natural gas and coal. They are both competition with water power, oil, electricity, wind power, and all other sources of energy. Therefore, any measure of control over the use of any single one of the many sources of energy will inevitably lead to control of all.

"Let competition under the watchful eye of the states be the arbiter for determining end use."

The Governor was supported in his view by statements from Attorney General Greek L. Rice and William M. Vaughey, independent producer of Jackson, Miss., who presented the "Producer's Viewpoint" for Mississippians.

Similarity Explained

There was presented for the record a copy of a Mississippi gas policy statement prepared by a committee which the Governor had appointed. It was so similar to the position that the natural gas industry spokesmen have taken that Morse was asked by Leland Richardson, counsel for the State of Louisiana, whether he could explain why the Mississippi policy statement was so similar to a policy statement written about a year ago by the Independent Natural Gas Association of America. Morse replied that he worked with the committee which wrote the Mississippi statement, and that he supposed the similarity referred to resulted from the fact that his committee thought so highly of the INGAA policy statement that they used it as a basis for developing their own.

Morse was most optimistic as to the possibility of Mississippi becoming a major producing state, asserting "using the present exploration program as an index, the optimistic views of the oil and gas industry concerning the possibilities of additional oil and gas discoveries in Mississippi are most certainly warranted. We know that the present number of known favorable prospects in Mississippi is greater than the number of discoveries to date.

"The future rate of discoveries of prospects is unpredictable, but it seems reasonable to forecast that the present reserves of oil and gas in Mississippi will be added to at a much faster rate than they will be withdrawn."

Crude Oil Production in the United States

(Estimates compiled by the OIL WEEKLY. All figures indicate daily averages in barrels.)

State or District	PRODUCTION IN WEEK ENDED February 16	February 9
Alabama	950	650
Arkansas	77,200	77,250
California	844,000	841,600
Colorado	22,800	22,450
Florida	100	100
Illinois	207,200	212,600
Indiana	15,900	14,800
Kansas	259,650	236,700
Kentucky	31,000	29,500
Louisiana	368,500	368,250
North Louisiana	79,800	79,600
South Louisiana	288,700	288,650
Michigan	44,900	45,500
Mississippi	55,100	55,200
Missouri	100	100
Montana	19,300	19,400
Nebraska	750	750
New Mexico	98,400	98,500
New York	13,300	14,050
Ohio	6,800	6,850
Oklahoma	389,450	389,100
Pennsylvania	33,750	35,150
Tennessee	35	35
Texas	2,110,100	2,110,400
Upper Gulf Coast	544,050	544,100
East Texas Field	321,700	321,750
Rest of Eastern Texas	146,000	146,000
Southwest Texas	356,150	356,200
West Texas	503,450	503,500
North Texas	157,700	157,750
Panhandle	81,050	81,100
West Virginia	7,400	7,200
Wyoming	99,500	98,750
Total United States	4,706,185	4,684,885

BUREAU OF MINES REPORT

Total stocks, foreign and domestic, February 9, as reported by the Bureau of Mines were 223,303,000 barrels with a daily average production of 4,691,000, and runs to stills 4,512,000.

Kentucky Meeting

The Kentucky Oil & Gas Association will hold its annual meeting June 7 and 8 at the Hotel Lafayette, Lexington, Ky., according to an announcement by J. C. Preston, executive secretary.

Motor Fuel from Farm Wastes Now Being Tested

A possible source of 2 million barrels of motor fuel a year is seen by the Department of Agriculture in the 100 million tons of farm wastes available annually in this country, of which no use is now made, the annual report of Secretary Clinton P. Anderson reveals.

The department, which has been studying the possibilities of motor fuel production from this materials, is completing construction of a pilot plant at its Peoria laboratory, where techniques and costs will be investigated.

"A process for the chemical conversion of such agricultural residues as corncobs, sugarcane baggase, peanut shells, flax shives, oat hulls and cottonseed hulls and burs into liquir motor fuel is moving into large pilot-plant production at the Peoria laboratory," the secretary reported.

"Results of experimental tests indicate that from 90 to 95 gallons of liquid motor fuel can be obtained from a ton of corncobs or cottonseed hulls, and that half of this is ethyl alcohol.

"A continuous process for the treatment of corncobs and cottonseed hulls has been worked out, and a suitable building is being constructed. Corncobs will be tried out on a large scale in the new semiworks plant which should be in operation in the early part of 1946. Research on the other residues will be started later.

"About 200 million tons of farm wastes are produced each year. Much of this is plowed back into the soil to help maintain fertility and prevent erosion, but after this is done something like 100 million tons is left that might be available for use in making motor fuel under this new process."

Anderson's report also reviewed the work of department chemists in aiding rubber investigations."

Papers Listed for AIME Meeting Slated in Chicago

The 163rd Annual Meeting of the American Institute of Mining and Metallurgical Engineers will be held at the Palmer House, Chicago, Illinois, February 25-28. The program has been completed, including the technical and social sessions, and nothing is omitted that a New York Annual Meeting ever had.

Tuesday morning's program of the petroleum division, M. L. Haider and C. V. Millikan, cochairmen, papers will be given as follows:

"The Viscosity of Water, Gas, and Gas-saturated Crude Oil Under Reservoir Conditions," by Carlton Beal.

"Interpretation of Well Test Data in Gas-condensate Fields," by J. O. Lewis.

Tuesday afternoon, H. F. Beardmore and K. A. Covell, cochairmen, the following papers:

"Reduction of Sulphates in Oil-field Waters," by F. B. Plummer.

"Gravel Packing of Oil Wells," by Thomas S. West.

"The Possibilities and Problems of Drilling Beyond the Continental Shelves," by Henry Emmet Gross.

Wednesday morning and afternoon foreign and domestic reports will be given as follows: Arabia and Bahrein, J. Terry Duce; Brazil, S. Fróes Abreu; Canada, G. S. Hume; Colombia, O. C. Wheeler; Ecuador, B. F. Zwick; Mexico, J. M. de la Garza Cardenas; Peru, O. C. Wheeler; Venezuela, D. B. Williams.

Arkansas, Donald K. Mackay and J. Sanders; Illinois, Alfred H. Bell; Indiana, O. W. Freeman; Kansas, Lee H. Cornell; Kentucky, Coleman D. Hunter; Louisiana, J. Huner, Jr.; Michigan, Theron Wasson; Nebraska, E. C. Reed; New Mexico, John M. Kelly; New York, C. A. Hartnagel; Ohio, K. C. Cottingham; Oklahoma, K. A. Ackley; Pennsylvania, Parke A. Dickey and Charles R. Fettke; Rocky Mountains, Raymon M. Larsen; Tennessee, Kendall E. Born; East and East Central Texas, D. V. Carter; Texas Panhandle, H. W. McCue; South Texas, E. C. Sargent and John W. Crutchfield; South Central Texas, William H. Spice, Jr.; West Texas, Gordon Fisher, and West Virginia, David B. Reger.

Petroleum economics papers will be given Thursday and afternoon as follows:

"The Trend in Costs of Replacing Petroleum Reserves," by James V. Brown, petroleum analyst, IPAA.

"U. S. Proven Crude Reserves vs. Price," by Charles Deegan, associate editor, Oil and Gas Journal.

"Economic Pattern of Oil Pipe Lines," by G. L. Shanks, valuation engineer, The Pure Oil Company.

"Productivity, Prices, and a Sound Wage Level," by J. D. Gill, economist, and A. B. Stainton, research assistant, The Atlantic Refining Company.

"Correlation of Drilling with Production Requirements," by Brad Mills, executive secretary, American Association of Oil Well Drilling Contractors.

"Trends in Relative Foreign and Domestic Petroleum Operations," by Howard W. Page, economics department, Standard Oil Company (New Jersey).

Papers listed for presentation by the geophysicists are listed below. The committee will meet on Thursday.

"Annual Review of Geophysics for 1945," by C. A. Heiland, chairman.

"Results and Recent Improvements of Methods and Techniques in Geophysical Prospecting," by Hans Lundberg.

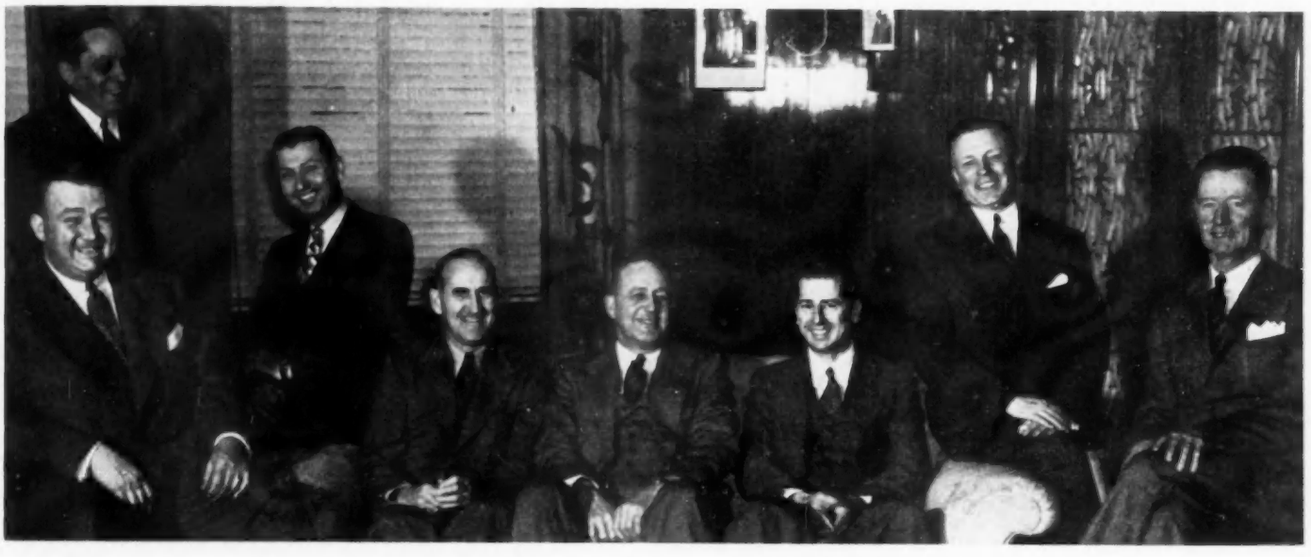
"A Geological and Geophysical Study of the Chelan Nickel Deposits, near Winesap, Wash.," by Ernest N. Patty and Sherwin F. Kelly.

"Geophysical Surveys at the Malachite Mine, Jefferson County, Colo.," by C. A. Heiland, R. M. Tripp, and Dart Wantland.

"Some Practical Aspects of Radioactivity Well Logging," by W. J. Jackson and J. L. P. Campbell.

"The Development and Geologic Application of an Air-Borne Magnetometer," by James R. Balsley.

1946 OFFICERS TULSA CHAPTER NOMADS



Officers to serve the Tulsa Chapter Nomads for 1946, elected recently, are shown above, left to right, as follows:

Shep Miers, manager of Southwest Supply Company, regent; Gene Elder, assistant Mid-Continent manager, Pittsburgh Steel Company, deputy sergeant-at-arms; Mitchell Tucker, manager of market research, The *Oil and Gas Journal* and *Petroleo Interamericano*, secretary; M. D. Gilbert, district manager, Pittsburgh Equitable Meter Company, treasurer; Henry Bourne, district sales manager, Republic Steel Corporation, president; W. G. Green, president of Engineering Laboratories, Inc., regent; Earle E. Smith, district sales manager, National Tube Company, assistant secretary; and J. H. Eustice, president of W. C. Norris Manufacturer, Inc., sergeant-at-arms.

Officers absent from the picture include Russell Hunt, attorney, vice president, and K. O. Hoevel, district sales manager, National Supply Company, assistant treasurer.

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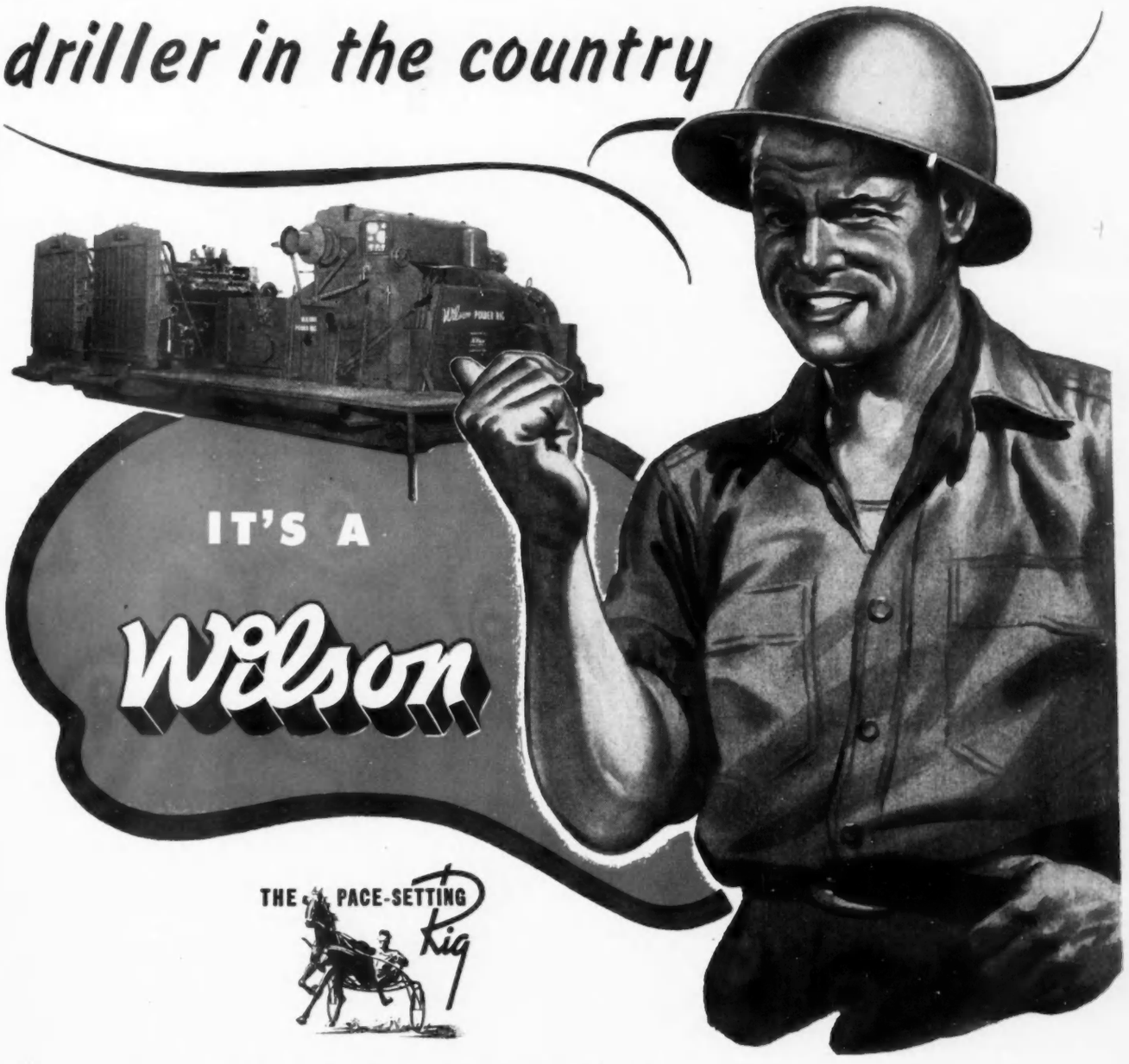

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Predictions of Behavior

An equation has been derived for the behavior of an air-gas drive operation based upon an empirical relationship found to hold for laboratory experiments on long cores. This equation predicts that the reciprocal of the oil production rate should be a linear function of the time. This relationship was tested on the production of several leases and found to hold remarkably well. A second equation was derived for predicting the cumulative oil production on a property. The theoretical predictions agreed very closely with the actual production.

IN A PAPER given at last year's Petroleum Production Conference[1] a relationship was shown to exist between the oil production from, or the saturation of, a core under air-drive and the volume of air necessary to attain that saturation. The oil saturation, starting with a completely saturated core, was found to be a linear function of the logarithm of the volume of air used to obtain that decrease. Such a plot is shown in Figure 1. Each line on the figure represents a different pressure gradient, the slopes of the lines becoming steeper as the gradients are increased.

All the long cores examined to date have followed this behavior regardless of permeability or viscosity of the oil contained in the cores. The relationship of four cores having different permeabilities have been plotted in Figure 2. The same gradient, 1.3 pounds per square inch per foot, and the same oil was used in each core. No apparent difference in behavior could be noted between the 40, 550, and 800. millidarcy cores. The behavior of the 10. millidarcy core was different from the others but the reasons for this difference are not too clear. It may be due to permeability but on the other hand it may be due to differences in sand structure, since the three similarly behaving cores are from the Cow Run sand and the 10. millidarcy core is from the Venango sand, having been taken from the Franklin mine. In spite of this difference in magnitude it should be noted that the lines are all essentially parallel, indicating the trend to be the same.

The use of different viscosity oils only changes the magnitude, the lines still being parallel. Even though the more viscous oils require more air to move them the slopes and therefore the trend remains the same.

Derivation of Field Production Rate Equation

When data can be plotted linearly, it lends itself to mathematical expression with a minimum of difficulty. The general equation for this saturation—gas volume relationship may be written as

$$S = N - Z \log V \qquad (1)$$

or

$$S = N - M \ln V \qquad (2)$$

in which

S = percent saturation
N = intercept in percent saturation
Z = slope of the line
V = gas volume in pore volumes
Log = logarithms to base 10
ln = natural logarithms

$$M = \frac{Z}{2.3}$$

By differentiation of equation (2) with respect to time we obtain

$$\frac{ds}{dt} = -\frac{M}{V}\frac{dv}{dt} \qquad (3)$$

Let us say that at some given time t_1

$$S_1 = N - M \ln V_1$$

which after rearranging becomes

$$\ln V_1 = \frac{N - S_1}{M}$$

$$V_1 = e^{\frac{N-S_1}{M}} \qquad (4)$$

Since 'V' is the total accumulated volume and V_1 is the volume up to some given time t_1 then

$$V = V_1 + \Delta V \qquad (5)$$

where ΔV is the additional pore volumes injected since the time represented by V_1. Also

$$\Delta V = \frac{Q \cdot t}{A \cdot f \cdot h} \qquad (6)$$

where

Q = gas injection per unit time
A = lease area
f = fractional porosity
h = sand thickness
t = time

Then by substituting (4) and (6) into (5) we obtain

$$V = e^{\frac{N-S_1}{M}} + \frac{Q \cdot t}{A \cdot f \cdot h} \qquad (7)$$

which is in turn substituted into (3) to give

$$-\frac{ds}{dt} = \frac{M}{e^{\frac{N-S_1}{M}} + \frac{Q \cdot t}{A \cdot f \cdot h}} \cdot \frac{dv}{dt} \qquad (8)$$

Since

$$\frac{dv}{dt} = \frac{Q}{A \cdot f \cdot h}$$

(in pore volumes per unit time)

and

$$-\frac{ds}{dt} = \frac{b \cdot 5.61 \cdot 100}{A \cdot f \cdot h}$$

(in pore volumes per unit time)

where

b = oil production rate

then

$$\frac{b \times 561}{A \cdot f \cdot h} = \frac{M}{e^{\frac{N-S_1}{M}} + \frac{Q \cdot t}{A \cdot f \cdot h}} \cdot \frac{Q}{A \cdot f \cdot h}$$

and

$$b = \frac{M}{561\left(\frac{e^{\frac{N-S_1}{M}}}{Q} + \frac{t}{A \cdot f \cdot h}\right)} \qquad (9)$$

which after inverting results in

$$\frac{1}{b} = \frac{561 \cdot e^{\frac{N-S_1}{M}}}{M \cdot Q} + \frac{561}{M \cdot A \cdot f \cdot h} \cdot t \qquad (10)$$

This can be more simply expressed as

$$\frac{1}{b} = C + D \cdot t \qquad (11)$$

in which C and D are constants if 'Q,' the air injection rate, is constant which is the usual case in field practice. This equation states that a plot of the reciprocal of the oil production rate against time should yield a straight line.

Test of Derived Equation with Field Data

With this in view, field data presented by Dickey and Bossler[2] were plotted, the result of which is shown in Figure 3. In these figures 'b' was chosen in terms of barrels per month per well, in order to obtain a more convenient comparison of behavior between leases.

The three points which are considerably off of the line for Lease V are due to a restricted air input during that period. When the air input was raised again the production came back up and followed the line fairly well. The lines were extrapolated to determine the economic limit set at 3 barrels per month per well the results of which are tabulated with the prediction of Dickey and Bossler[2] in the following table:

Prediction of Economic Limit

Lease	From Figure 3	By Dicky and Bosslere[2]
I	1944	1944
V	1954	1954
VII	1968	1967
IX	1971	1969

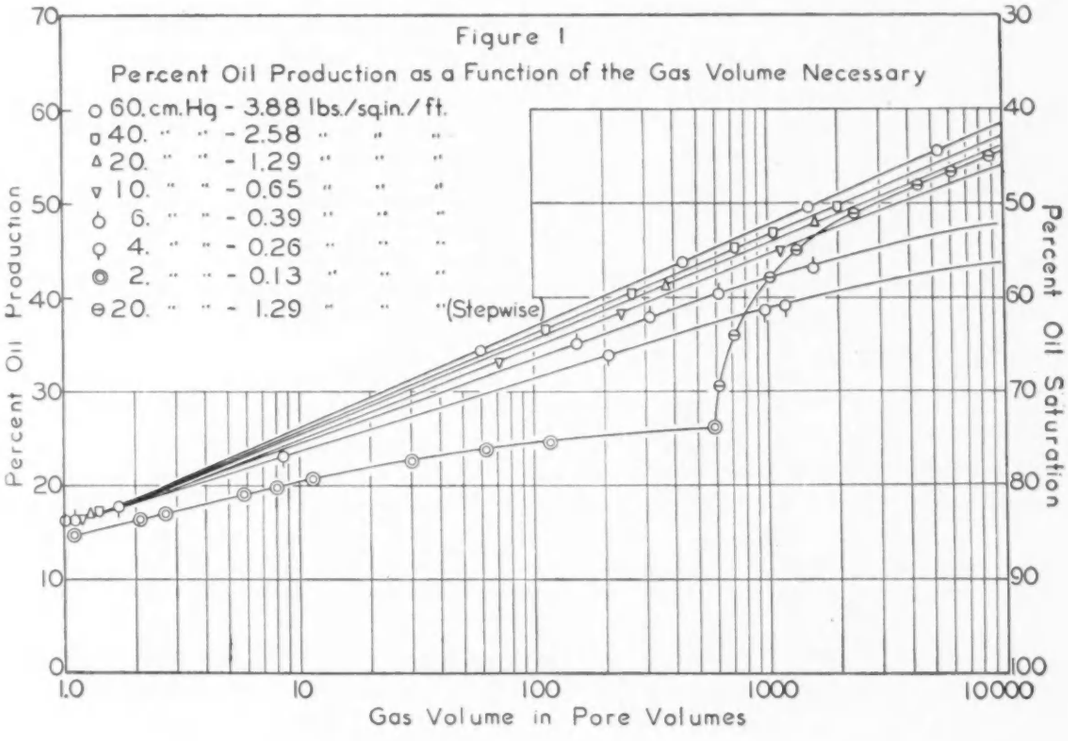
As a further test of the equation additional lease data, which was kindly supplied by one of the producers, was plotted in Figure 4. No other reason for the divergence of the points for 1942, '43, and '44 could be found in the data than the wells were being pumped less frequently and intermittent injection was being used.

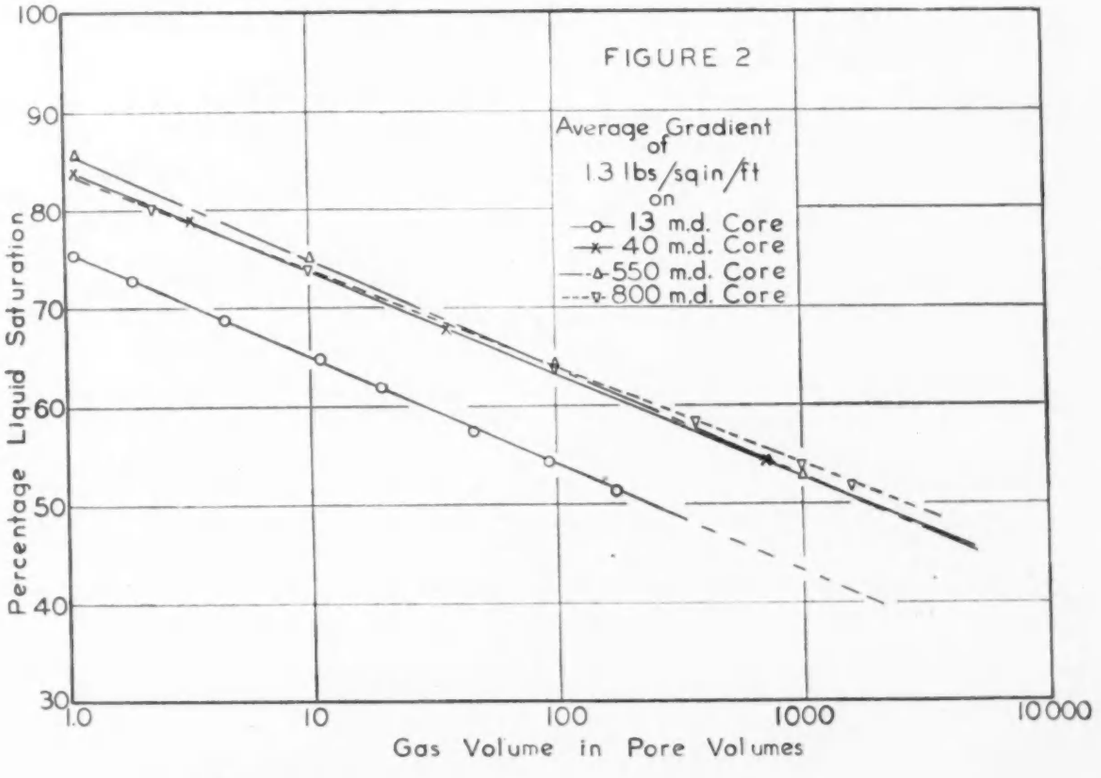
The slope of these lines is represented by the 'D' term of equation (11) or in equation (10) by

Presented at the Ninth Technical Conference on Petroleum Production at the School of Mineral Industries, The Pennsylvania State College, State College, Pa., November 2 and 3, 1945.

In Air-Gas Drive

By R. J. DAY and S. T. YUSTER, Division of Petroleum and Natural Gas Engineering, The Pennsylvania State College, State College, Penn.





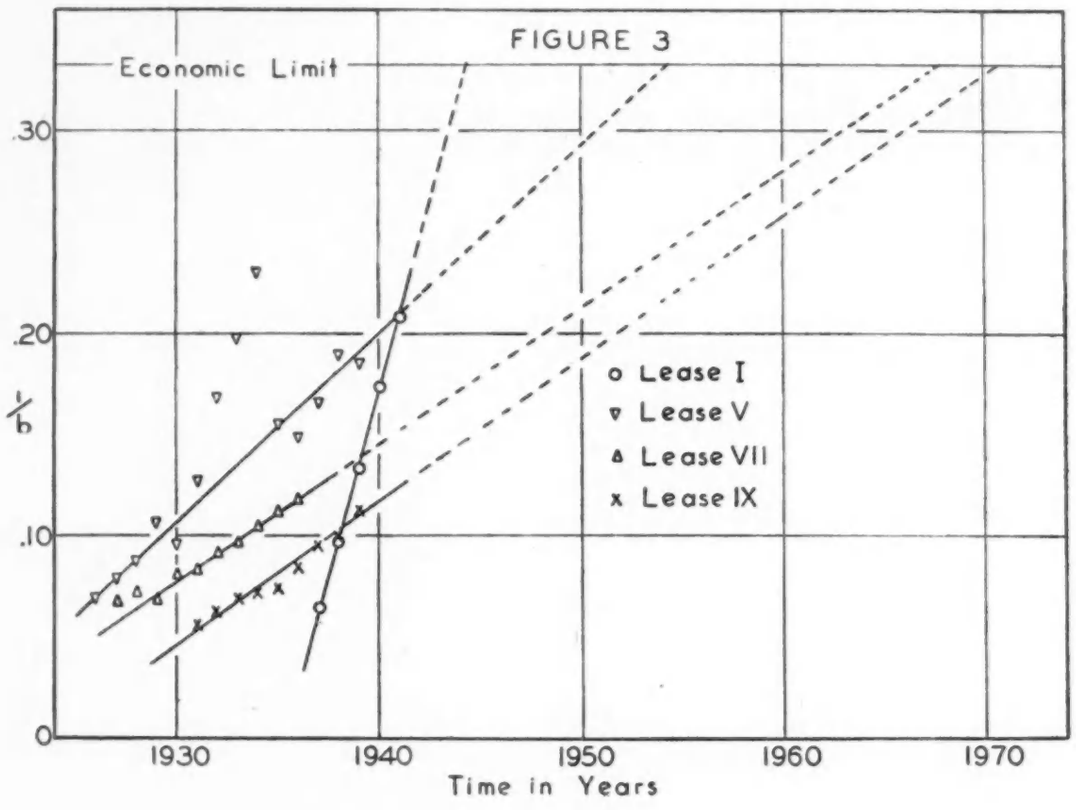


FIGURE 3
Economic Limit
.30
.20
.10
0
1/b
o Lease I
▽ Lease V
△ Lease VII
x Lease IX
1930
1940
1950
1960
1970
Time in Years

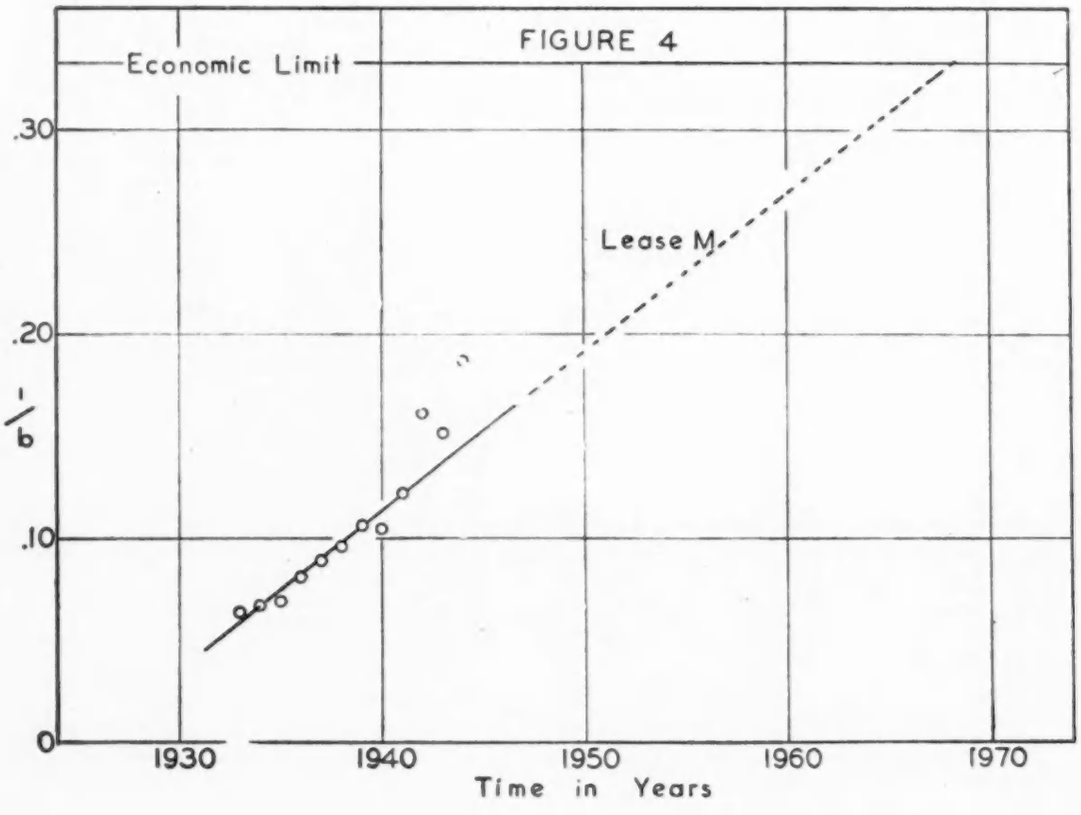


FIGURE 4
Economic Limit
.30
.20
.10
0
1/b
Lease M
1930
1940
1950
1960
1970
Time in Years

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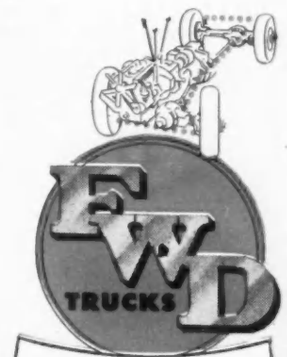

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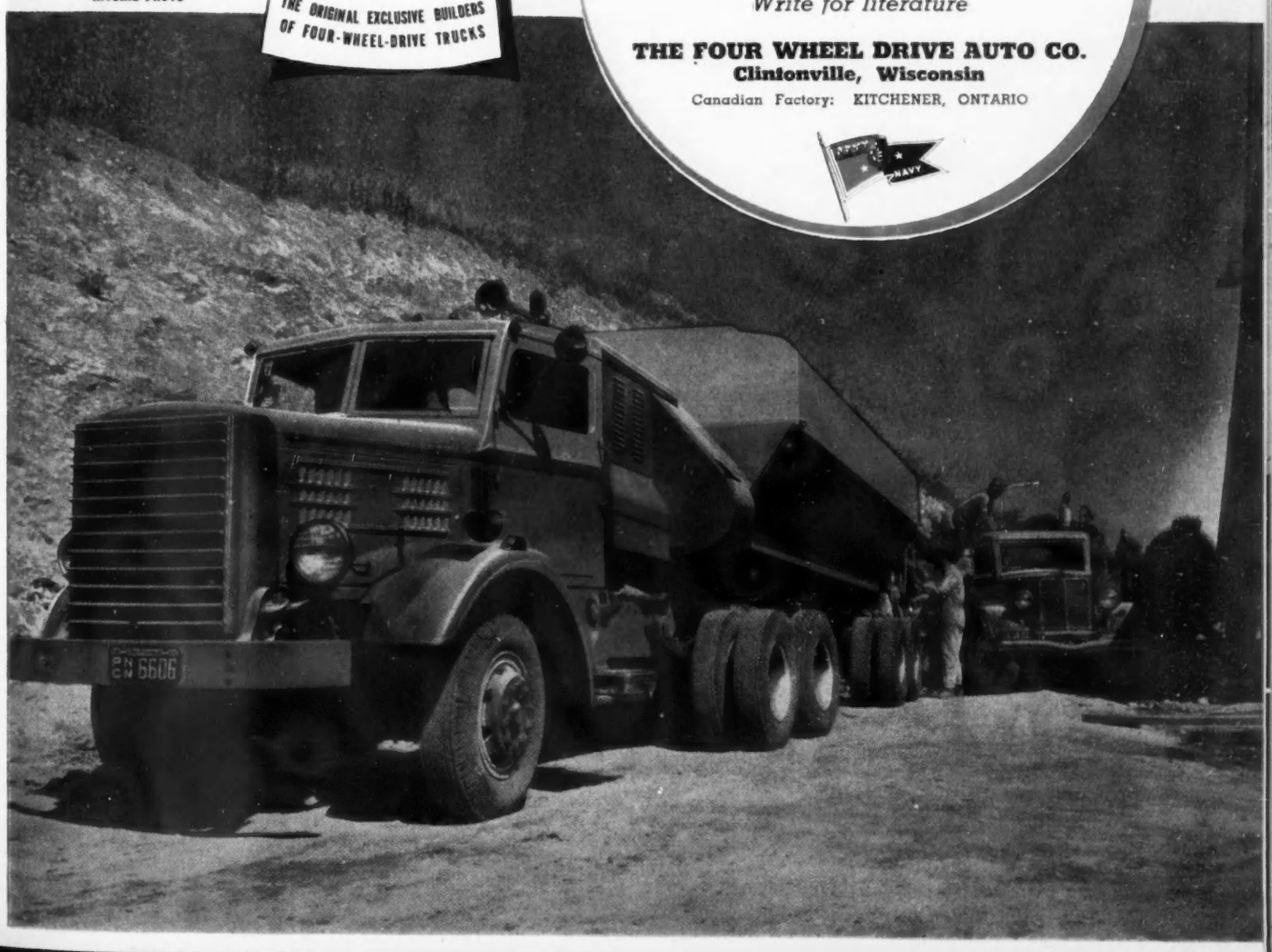

$$\frac{561}{M \cdot A \cdot f \cdot h}$$

Since all the components except 'M' are known 'M' can be solved for and in turn used in the evaluation of the other remaining terms of equation (10). A sample calculation will be made on Lease VII.

Lease VII Data:

133 acres
62 oil wells
35 feet of sand
13% porosity
250,000 cu. ft./day average air input.

The slope of the line representing Lease VII is 0.00675. Converting this to a yearly and total lease basis and equating to the expression for the slope in equation (10) gives

$$\frac{0.00675}{12 \times 62} = \frac{561}{M \cdot 133 \cdot 43{,}560 \cdot 0.13 \cdot 35}$$

$$M = 2.35$$

Upon comparing this value with the 'M' values in the table below taken from the lines in Figure 1 it is seen that a fair agreement is obtained between the value for Lease VII and the values for low pressure gradients.

"M" Values from Figure 1

Gradient; Lbs./Sq. in/Ft.	M
0.13	2.52
0.26	3.39
0.39	3.82
0.65	4.13
1.3	4.34
3.9	4.56

The 'M' value so obtained may now be used to evaluate the components of the other term of equation (10), namely

$$\frac{561 \cdot e^{\frac{N - S_1}{M}}}{M \cdot Q}$$

which is equal to 1/b when 't' equals zero. Since the vertical axis, 1/b, may be shifted along the time axis without affecting the relationship in any way 't' can be set at zero for any chosen time and the values along the time axis may be dealt with in terms of Δt. Setting $t = 0$ at 1929

$$\frac{1}{b} = 0.07 = \frac{561 \cdot e^{\frac{N - S_1}{M}} \cdot 62 \text{ wells}}{2.35 \cdot 250{,}000 : 30.5 \text{ days/mo.}}$$

Solving for S_1 gives

$$S_1 = N - 2.35 \cdot 2.3 \cdot 1.5569$$

Neither the liquid saturation of the lease nor the 'N' value are known. The knowledge of either one would lead to the determination of the other. In the absence of this data let us assume an 'N' value of 76 taken from the Venango core in Figure 2. Then

$$S_1 = 76. - 8.4 = 67.6\%.$$

An average oil saturation of 23% was given for this lease which would leave a water saturation of 44.4% which is not too unreasonable.

The data from Lease M, plotted in Figure 4, upon calculation yielded an 'M' value of 1.81. Core analysis from two wells on the lease averaged a 23.8% oil saturation and a 43.4 percent water saturation which gave an 'N' value of 75.7 for that lease.

This agreement is rather fortuitous because usually reported oil saturations are suspected of being lower than the actual saturations due, for one reason, to the possibility of partial flushing out of the oil during coring operations which would result in higher water saturations and lower oil saturations than actual.

Derivation and Demonstration of Cumulative Production Equation

The cumulative oil production from a lease may be calculated over any given period of its productive life by integrating the production rate. If 'B' equals the cumulative oil production, then

$$B = \int_1^2 b \; dt = \int_1^2 \frac{dt}{(C + D \cdot t)} \qquad (12)$$

$$B = \frac{1}{D} \ln \frac{(C + D \cdot t_2)}{(C + D \cdot t_1)}$$

or

$$B = \frac{2.3}{D} \log \frac{(1/b_2)}{(1/b_1)} = \frac{2.3}{D} \log \frac{b_1}{b_2} \qquad (13)$$

'D' is the slope of the lines in Figures 3 and 4.

A sample calculation on Lease VII will serve as an example.

$$B = \frac{2.3}{9.07 \times 10^{-4}} \log \frac{.145}{.05}$$

$$B = 117{,}400 \text{ barrels.}$$

This may be compared with the 114,200 barrels reported by Dickey and Bossler[2] as being produced from this lease over the period from 1926 to 1940. A tabulation of the 'M' values and a comparison of the calculated and actual productions from the leases mentioned are shown in the following table:

Lease	'M'	Cumulative Oil Production—Bbls. Calculated	Cumulative Oil Production—Bbls. Actual	Percent Reduction in Saturation	Period of Time
I	0.6	11,300	11,500	0.81	1936–40
V	1.11		146,164	1.64	1915–40
VII	2.35	117,400	114,200	2.43	1926–40
IX	2.45	53,200	53,046	2.33	1930–40
M	1.81	48,820	47,730	1.68	1933–45

In passing it might be noted that the production of 114,200 barrels of oil in the 14-year period from Lease VII amounted to a reduction of 2.4 percent in the oil saturation on a pore volume basis. This reduction in oil saturation for the particular period of time considered is also listed for each lease in the table above. In any one case it is not very great.

Using equation (12) and Figure 3, the production on Lease VII can be predicted from any year to the economic limit. For example, from 1926 to 1968, 209,214 barrels are calculated which may be compared with 206,200 barrels predicted by Dickey and Bossler.[2] Furthermore, this production would correspond to a 4.5 percent reduction in the oil saturation on a pore volume basis.

The performance of Lease I is very much different from that of the others. Judging from core behavior that particular lease is behaving inefficiently. Unfortunately the air injection data were omitted for that lease so that it is not known whether a low rate is responsible. On the other hand by-passing may be the cause of the inefficiency. It hardly seems possible that the few wells contributing oil by natural production but unaffected by air would be responsible for its behavior. On the contrary, it would be expected that the 'M' value would be higher if some natural production were still contributing. In fact when such is the case, natural and air drive acting simultaneously, a linear function according to equation (11) is not obtained.

Air injection data for Lease V is also missing so that there is no way to account for its lower 'M' value except in the same way as for Lease I. It is suspected that both leases were operating under low pressure gradients or else serious by-passing was taking place. Some idea of the general permeability of the leases might have been helpful also.

As was mentioned previously, leases on which some natural production is taking place along with air injection will not lend themselves to this analysis. Perhaps they could be made to respond if the extent of the natural production were known and could be corrected for. In addition to that, any changes in operation such as addition or subtraction of wells, cleanouts, fluctuations in injection rates, etc., affects the production rate, thereby increasing the difficulties of making clear analyses and predictions. This, of course, applies to any method of analysis.

One important fact which stands out is the correlation between laboratory and field behavior. The derivation of the equations which define field behavior were based on an equation that defines core behavior in the laboratory. The fair agreement of 'M' and, somewhat fortuitously, 'N' values between field and laboratory also confirms the correlation. It shows that when we know enough about laboratory and field behavior and when sufficient and reliable data are at hand, correlations can be had and engineering applications can be made of the results.

Summary

1. A linear function is shown to exist between liquid saturation of long cores, under air drive in the laboratory, and the logarithm of the volume of air necessary to reach that saturation.

2. The equation so obtained for laboratory performance is used as a basis for the derivation of an equation describing field behavior under constant rate of air injection.

3. The field equation states that the reciprocal of the oil production rate is a linear function of the elapsed time.

4. The validity of the field equation was verified by the use of data from five leases.

5. Fair correlation was obtained between the constants of the equation in item (3) for the field relationship with the corresponding constants for the laboratory relationship.

6. An equation for the accumulative oil production in the field is derived which states that the production over a given period of time is proportional to the logarithm of the ratio of the initial and final oil production rates.

7. Agreement was obtained between actual production and that calculated by use of the equation of item (6).

Acknowledgments

The field data used in this analysis, which was furnished by operators in the air-gas drive area of Pennsylvania are gratefully acknowledged by the writers. This work was supported in part by the Pennsylvania Grade Crude Oil Association.

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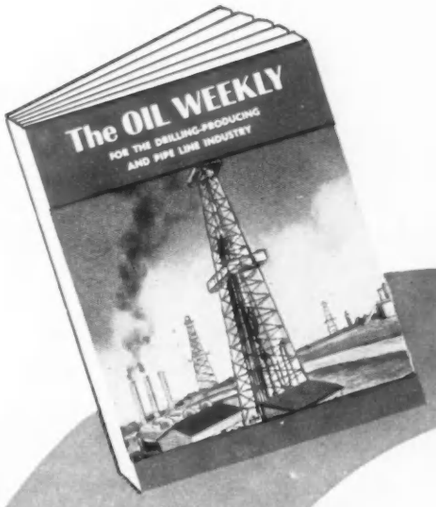

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Graph for Determining Velocity of Gas Flow

By
LYNDON L. FOLEY
Petroleum Engineer
and Geologist,
Tulsa

Hawkins Flow String Formula

$$V = \frac{C}{A \times P \times 5760}$$

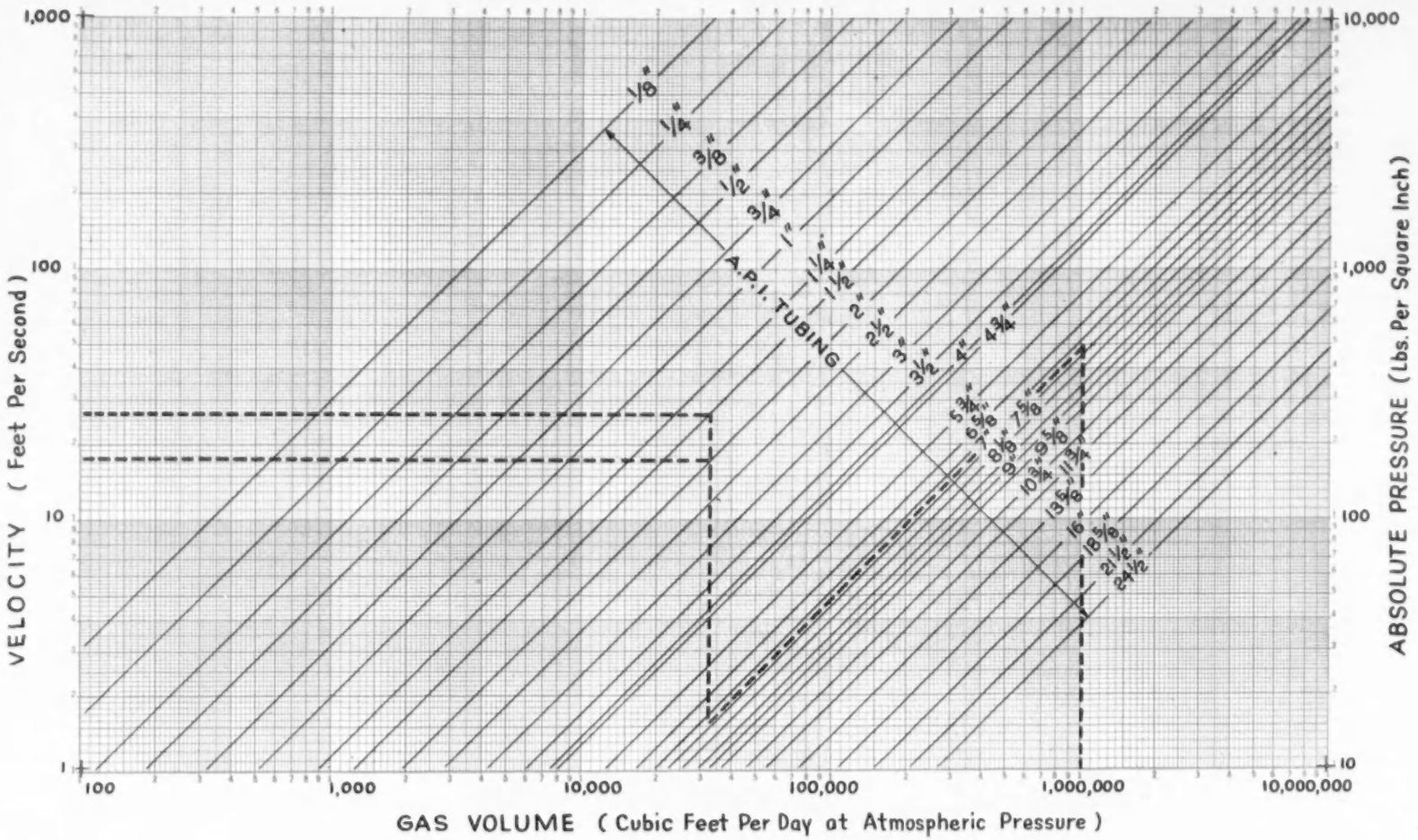
V = Velocity of flow in feet per second.

C = Volume of gas in cubic feet per day.

A = Cross section of pipe in square feet.

P = Absolute pressure in lbs. per sq. inch.

Example: Given 1,000,000 cubic feet per day at 500 lbs. per square inch working pressure, velocity desire 20 feet per second, 2-inch tubing will give velocity of 17 feet per second; or 1½-inch tubing will give velocity of 26 feet per second.

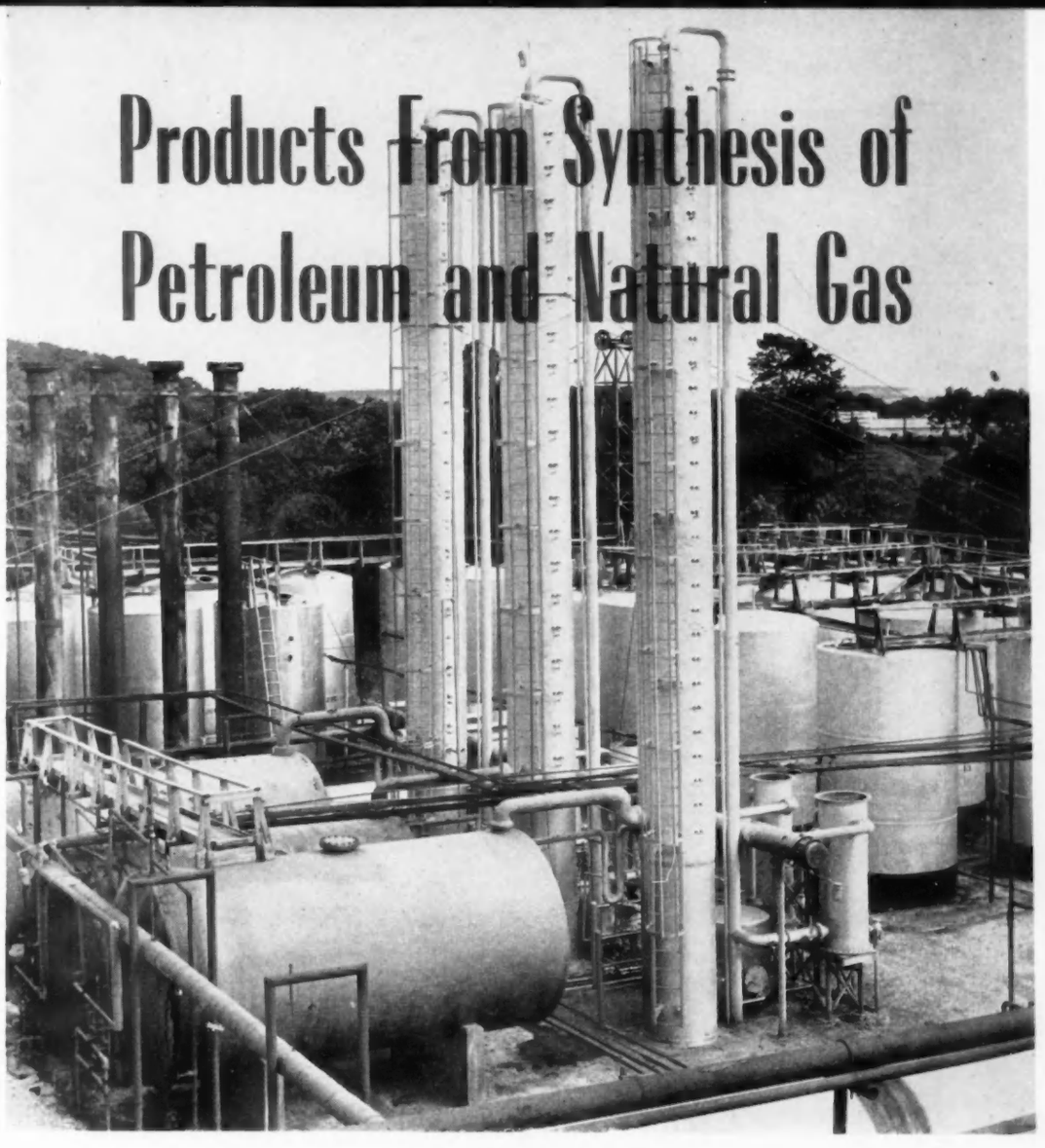


THE velocity of gas in flow strings is a vital factor in the design of flow strings, particularly in gas lift problems. This problem was discussed by R. R. Hawkins in his paper, "Flowing Wells with Small Tubing," *AIME Petroleum Development and Technology*, 1932, p. 306. Hawkins shows a series of charts, each designed for a certain size of tubing. The accompanying graph shows a method of combining them in order that that many, or all, pipe sizes may be shown on the same chart.

The method of using is shown by the example given in the upper lefthand corner of the chart. Starting with the volume of the gas at atmospheric pressure, draw a vertical line the working pressure shown on the righthand scale. From this point draw a line of 45-degree slope downward to the left to intersect the 15-pound pressure line, which gives the approximate volume of the gas at the working pressure. A line drawn vertically to the line representing the pipe size and projected to the lefthand scale will give the velocity of flow in feet per second.

The size of the graph necessarily was reduced for publication purposes.

Products From Synthesis of Petroleum and Natural Gas



Tallant, Okla., Chemical Plant.

The Expanding Chemical Industry Offers New and Profitable Markets for Oil and Gas Products

By HARRY P. HOHENADEL, Cities Service Oil Company, Bartlesville, Oklahoma

THE amazing developments of the chemical industry during the past few years have inspired so much publicity that the feature writers assure us we are entering a "Chemical Age," industrially as important as the "Steel Age" and the "Electric Age."

Whether or not these assurances are over-statements, it is a fact that the expansion of the chemical industry during the past 25 years has been enormous. The Chemical Bureau of War Production Board calculates the value of chemicals produced during 1944 at $8,300,000,000.

Summary of paper presented before the joint meeting of the Mid-Continent Section, Petroleum Division, AIME, and the Engineers Club of Tulsa.

I would like an analyze certain aspects of this chemical development with respect to its significance in the development of oil and gas resources, pointing out four significant and important trends:

1. Many of the recently developed chemical products are new creations, not substitutes.

2. Many of these chemical products will enter the mass consuming markets which require enormous tonnages of products and such markets are setting up an industrial demand for chemicals on a mass volume basis as compared to the relatively high priced-low volume basis ordinarily considered as the chemical outlet of the past.

3. Most of the processes involved in producing these chemicals are adaptable to the use, all or in part, of natural gas, oil, or refinery gases as raw material.

4. The relative purity of the petroleum hydrocarbons as ideal synthesis stock is attracting the chemical industry to the oil provinces which are the sources of the raw materials—gas and petroleum.

The chemical industry's expansion with new products derivable from petroleum now reaches into practically every industrial field.

The development of synthetic resins alone has now reached the status of a major industry and has made the word "plastics" as generic as petroleum. Despite the limitations of war restrictions of various raw materials, the dollar value of plastics produced during 1944 is re-

First plant of its type ever built in this country for the manufacture of formaldehyde from petroleum gases and a big contributor to the war effort. Cities Service Oil Company's Chemical Plant at Tarrant, Okla., is a forerunner of other units which probably will be erected in other sections of the country by the oil and gas industry to manufacture many new products in the synthesis of which natural gas and petroleum will be the principal components.

ported as $400 million and currently the tonnage is shoving ahead toward the billion pounds a year mark. And while these plastics are of wide varieties as to composition and synthesis, practically all are based on ethylene, propylene, acetylene, acetaldehyde, formaldehyde, urea and aromatic compounds, all derivable from the petroleum hydrocarbons.

Some of the modifications of textiles by treatment with resins made from formaldehyde are proving ideal for the production of shrink-proof woolen goods, water repellant suit cloth and wrinkle-proof dress fabrics. Even though but a relatively small amount of the chemical may be needed to give the end desired to a yard of cloth, the tremendous requirements in an ever-consuming industry such as this is obvious.

Synthetic Fabrics

While nylon has struck the public's fancy, for hose, at least 11 nylon modifications are reported as probable, covering every range of the textile field and extending into the general field of plastic products. At least three other synthetic fabrics, based on products derivable from petroleum are already on the market by the large chemical companies.

The chemical industry has made basic contributions varying from modification of the cement in the substructure to the improved paint on the finished job. Of the outstanding tonnage items which will prove of importance, most interesting are the developments of the modern plywoods as a construction item in the homes field, the modified or "transmuted wood" timber in the home and general construction field and the developments in the field of adhesives, which may ultimately be reflected in all industrial construction work.

Of equal and important interest is the development of transmuting wood by treating it with such chemicals as urea and dimethylolurea, in the synthesis of which natural gas can be made an important component.

The timbers are subjected to an absorption treatment with these chemicals in a manner very similar to the treatment of a railroad tie with creosote. The treated wood becomes harder, denser, more water resistant and for all practical purposes rot-proof, termite-proof and warp-proof. Cheaper woods such as southern pine can be made to take on the structural advantages of the naturally harder woods and open up vast possibilities for a source of ideal woodworking and furniture stock.

Chemical Needs

The chemical requirements for a thorough hardening job require the chemicals to an amount equivalent to about 15 or 20 percent of the dry weight of the wood, and based on present costs of the chemicals would approximately double the cost of yellow pine. However, by controlling the penetration rate an effective job of hardening the outer zone can be accomplished and the cost of such "case-hardening" will be materially less. By introducing dyes to the bath brilliant colors can be imparted to the wood.

Another of the new products derivable from petroleum and its gases is the line of vinylidene chloride polymers such as Saran. Varying from circular monofilaments as fine as 0.007 inch to heavy plastic sections, the field for such polymers ranges from fine fabrics, special ropes, hand-bags, shoes and upholstery through such common-place heavy tonnage requirements as window screening and household and industrial plumbing and piping.

Some of the newest products developed are the silicone rubbers or bouncing putty. At present chief interest in their utilization centers in the field of high temperature insulation which has permitted design of electrical machines of higher temperature limit tolerances, resulting in an increase of power output by as much as one-fourth and a reduction in weight by as much as 50 percent.

These are but a few of the many new developments in chemistry utilizing gas and crude oil as raw materials and serve to illustrate that while the chemical industry has entered the mass production field we of the oil and gas industry have excellent opportunities to find new and immensely profitable markets for our products.

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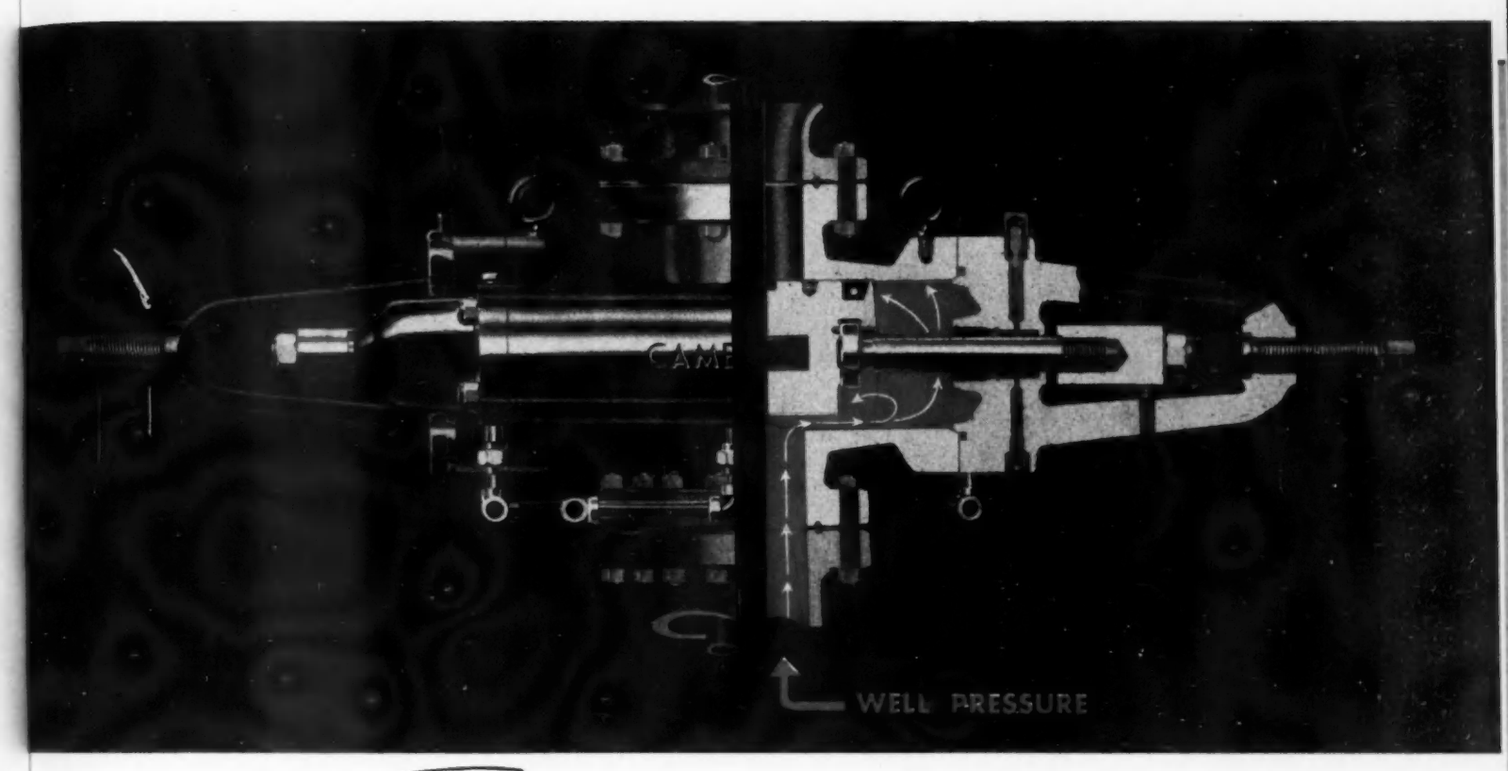

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Functions of Bacteria in the Formation And Accumulation of Petroleum

By DR. CLAUDE E. ZoBELL
Associate Professor of Microbiology at the Scripps Institution of Oceanography of the University of California, and Director of API Research Project 43A.

ACCUMULATING data continue to show that bacteria are important chemical and geological agents in bottom deposits where they help to accelerate many processes.[1, 2] The vast numbers, physiological versatility, and almost universal distribution of bacteria in sedimentary materials help to explain their effectiveness.[3, 4] Controlled laboratory experiments with bacteria under environmental conditions designed to simulate environmental conditions in nature demonstrate that the bacteria could be functional *in situ*. Such experiments, coupled with the correlation of the numbers and kinds of bacteria with chemical, physico-chemical, and geological conditions found in sediments, clearly show that bacteria are instrumental in the modification and diagenesis of sedimentary materials.[5] By virtue of their effects on organic matter and physico-chemical conditions in sediments, bacteria may play an important role in the formation and accumulation of petroleum.

API Research Project 43A

As a part of its general program of research, for several years the Scripps Institution has conducted investigations on the role of bacteria and allied microorganisms in the transformation of recent marine sediments. Impetus has been given to these studies by the financial support of the American Petroleum Institute, which, since July, 1942, has been contributing approximately ⅓ the cost. Even more impelling has been the increasing interest and cooperation of petroleum geologists, many of whom are coming to realize the importance of bacterial activity in the formation and transformation of petroleum hydrocarbons.

API Research Project 43A was originally planned to study the chemical composition, particle size, character of lamination, water content, porosity, compaction, fossils of stratigraphic significance, physico-chemical characteristics, and bacterial population of long cores of recent marine sediments, with particular reference to the biochemical activities of bacteria. The cores were to have been collected from selected localities where source sediments appear to be being deposited. The plan was to follow the stratigraphic succession in sediments from the time that they are deposited until they become oil-bearing sands.

The ultimate objective of the project was to gain information regarding the origin of oil which would be useful to the geologist in the search for subterranean deposits. Our entrance in World War II necessitated a modification of the original plans, but the objectives remain imperative.

Although the national emergency has curtailed work at sea, it has been possible to obtain samples for experimental work. Fortunately, many previously collected sediment samples and bacterial cultures were on hand at the outbreak of the war, and the petroleum industry has cooperated by providing us with samples of reservoir fluids and other materials. Thus, while work on the stratographic succession in source sediments has been interrupted temporarily, several significant observations have been made on the relation of bacteria to petroleum and its products.[6, 7] There follows a progress report supplemented by a summary of related work from the periodical literature.

Bacteria's important role in the formation and accumulation of petroleum is gaining increased recognition

Biochemically active bacteria appear to be widely and abundantly distributed in recent sediments, both marine and lacustrine.[8, 9, 10] The maximum depth at which bacteria are alive and active is not known. They have been found in abundance in the longest cores collected from the ocean floor. The longest core examined was about 17 feet long and represented a penetration of about 25 feet. Changes in the sulfate content, redox potential, and organic content of profile samples suggest that the bacteria have been active in the sedimentary material since its burial several thousand years ago.

Although appreciable numbers of viable bacteria have been found in carefully collected cores, the bacteriological analysis of cores of older sediments obtained from oil wells have not been conclusive because of the difficulties attending the aseptic collection of samples. Since drilling muds and various drilling devices are generally contaminated by large numbers of bacteria, it is virtually impossible to ascertain whether the bacteria, found in cores of ancient sediments are adventitious forms introduced during the drilling process or whether they are indigenous species which exist in ancient sediments.

Lower Limits of Biosphere

There is conclusive evidence that living bacteria occur and may be active in certain sediments of considerable antiquity. For example, bacteria were found in cores of Louisiana sulfur-limestone-anhydrite formation taken from a depth of 1560 feet, under experimental conditions which seem to preclude the possibilities of extraneous contamination. The bacteria are unlike any known soil, water or air varieties, and their temperature and salinity optima correspond with conditions in the anhydrite formation. There is a geological theory that anhydrite is being reduced to sulfur in this formation, and it was demonstrated that the bacteria are endowed with this ability. The bacteria in question are able to utilize complex organic matter like that in the anhydrite formation.

In highmoor peat, which is a type of sedimentary material especially rich in organic matter, large numbers of viable bacteria were found[11] in almost undiminished numbers throughout the entire profile to the bottom of the greatest depth examined, namely 17 feet. In clay and sand deposits, von Wolzogen Kühr[12] found sulfate-reducing bacteria living at depths of 30 to 120 feet.

The presence of living bacterial in

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API research project workers, left to right, G. David Novelli, Barbara Fay Brown, William D. Rosenfeld, Josephine B. Senn, Gregory J. Jankowski, and Dr. ZoBell, director. Inset, Jean E. Switzer.

coal 1800[13] to 3600[14] feet below the earth's surface has been reported. Farrell and Turner[15] question whether bacteria found in anthracite coal are indigenous species, since there is a possibility that the bacteria have been carried into the formation by meteoric water.

Sulfate-reducing bacteria have been recovered from oil-well brines at depths exceeding 1000 feet by Bastin,[16] Gahl and Anderson,[17] Bastin and Greer,[18] Ginter,[19] Ginsburg-Karagitscheva,[20] and others. We have found appreciable numbers of sulfate-reducing as well as fat-splitting bacteria in reservoir fluids taken from depths as great as 6000 feet. While these bacteria could have been introduced during the drilling operations, their continued abundance for several months since anything was introduced in the well, together with the peculiar types of organisms found, indicate that either the bacteria are indigenous species or else they have found conditions suitable for their growth when transplanted in the reservoir fluid.

Issatchenko[21] avers that the sulfur bacteria, which he found in oil from a depth of 6000 feet, are indigenous species from near the lower limits of the biosphere.

According to Ginsburg-Karagitscheva,[22] living bacteria are most abundant in Tertiary formations and gradually disappear in Cretaceous, Jurassic, Permo-Triassic, and Permian formations. This worker interprets the absence of sulfates from certain oil waters as evidence of earlier bacterial activity.

Samples of cores and reservoir fluids from petroliferous sediments rigorously collected to preclude all possibilities of extraneous contamination are urgently needed in order to establish the greatest depth at which bacteria are alive and active. Judging from laboratory observations on the behavior of bacteria in environments designed to simulate those in nature, it is believed that the greatest depth at which bacteria may be found alive and active in ancient sediments containing water and organic matter will be determined by the temperature of the formation.

While certain sporulating bacteria survive at temperatures as high as 240° F., the highest temperature at which the the growth of thermophilic bacteria has been observed is 190° F. Whether more thermotolerant bacteria will be found in reservoir fluids from depths where the temperature exceeds 190° F. is an unexplored horizon. Certainly there are bacteria which will tolerate any degree of salinity or hydrostatic pressure occurring in reservoir fluids.

According to the literature summarized by ZoBell,[23] most bacteria are not injured by hydrostatic pressures as high as 200 atmospheres (30,000 pounds per square inch), and some have been shown to survive pressures ten times this great. Halophilic bacteria which thrive in brines having a salinity of 15 to 30 percent are quite common.[24] Numerous bacteria occur in Great Salt Lake[25] and the Dead Sea,[26] bodies of water having salinities ranging from 25 to 30 percent.

Do Bacteria Produce Petroleum Hydrocarbons?

It has been known for several years that anaerobic bacteria tend to convert certain kinds of organic matter into substances which are more petroleum-like. This the bacteria do by splitting oxygen, nitrogen, sulfur, and phosphorus from organic compounds, leaving residual compounds which consist primarily of carbon and hydrogen.

More recently the ability of sulfate-reducing bacteria to synthesize hydrocarbons from certain fatty acids has been reported.[27] The sulfate reducers were grown in sea water enriched with fatty acids. After three weeks' incubation at 78° F. appreciable quantities of oil-like, ether-soluble, non-saponifiable material were extracted from cultures growing on n-capric acid ($C_9H_{19}COOH$). The oil-like extract was tentatively identified as a mixture consisting primarily of normal paraffins ranging from $C_{15}H_{32}$ to $C_{28}H_{58}$ and some ceresin wax. The experiment has been repeated with acetic, propionic, butyric, caproic, stearic, and lactic acids. These are all fatty acids which result from the bacterial decomposition of organic matter. The fatty acids may be expected to occur in marine sediments. The best yield observed to date is 34 milligrams of oil-like extract from 1.0 grams of capric acid.

It is common knowledge that methane is produced by the action of bacteria on organic matter in an anaerobic environment. Ethane and propane in lesser amounts may be produced also. Neave and Buswell[28] found that from 0.7 to 12.1 percent of the gas produced by anaerobic bacteria in sewage was ethane. Ethane, propane, pentane, and butadiene were detected by Rawn and co-workers[29] in the gas produced by bacteria growing on sewage sludge.

Aromatic hydrocarbons and their derivatives may be produced by bacterial action on proteins. Proteins are attacked by bacteria with the liberation of amino acids which, in turn, may be deaminized or decarboxylated by bacteria. Phenol and benzene have been reported from the reductive deaminization and decarboxylation of the amino acids tyrosine and phenyl alanine.

Bacteria which decarboxylate the amino acids arginine and lysine with the formation of putrescine ($CH_2NH_2.(CH_2)_2.CH_2NH_2$) and cadaverine ($CH_2NH_2.(CH_2)_3.CH_2NH_2$) respectively occur in marine sediments. From an inspection of the formulae of these products, it will be observed that their reductive deaminization would result in the formation of butane and pentane.

Ginsburg-Karagitscheva[22] relates that anaerobic bacteria from the Black Sea transform albuminous materials and fatty substances by processes of hydrogenation, decarboxylation, and polymerization into natural gas and dark-colored, oil-like products having a bituminous odor. He regards it as established that petroliferous formations and oil-bearing beds have been inhabited by active microflora.

Leprotene, flavorhodin, and carotene are examples of unsaturated hydrocarbons produced by certain bacteria.[30] Although these pigmented hydrocarbons have not been found in crude oil, their hydrogenation would result in the formation of petroleum hydrocarbons.

The foregoing examples should suffice to indicate that bacteria may be able to produce a large variety of hydrocarbons under conditions that are well within the "geological fence." The work has not progressed far enough to conclude that the hydrocarbons of petroleum have been produced by bacteria, but the possibilities certainly merit further consideration.

Hydrogen Production

Hydrogen produced in recent sediments may be instrumental in the hydrogenation of organic matter and its conversion into petroleum hydrocarbons. Similarly, microbially produced hydrogen sulfide may reduce carbohydrates to hydrocarbons. Hydrogen sulfide is produced in abundance by bacteria in sediments both from sulfate reduction and from the decomposition of poteins.

Most one-gram samples of marine sediment (both recent and ancient) which have been analyzed show the presence of anaerobic bacteria which produce hydrogen from organic matter. As much as 60 percent of the gas by volume produced by enrichment cultures recovered from the floor of the Pacific Ocean has proved to be hydro-

gen. A large number of carbohydrates, organic acids, complex alcohols, and proteins serve as substrates for hydrogen production.

Hydrogen has been detected in mud gases from the floor of the ocean. Perhaps the reason free hydrogen is less commonly found in nature is because of the ease with which it is activated by bacteria as a reducing agent. The reduction of carbon dioxide by bacterially activated hydrogen is believed to be the principal way in which methane is formed[31]:

$$CO_2 + 4H_2 \rightarrow CH_4 + 2H_2O$$

In experiments with mixed cultures of bacteria, an inverse relation has been noted between the amount of hydrogen and methane liberated. As the concentration of methane increases the concentrations of hydrogen and carbon dioxide decreases, thereby suggesting the hydrogenation of carbon dioxide with the formation of methane as represented by the above equation.

Sulfates are also reduced by the bacterial activation of hydrogen[32]:

$$CaSO_4 + 4H_2 \rightarrow 4H_2O + CaS$$

Such a reaction may help to account for the paucity of hydrogen and the abundance of sulfides in source beds of petroleum. Some hydrogen may be transferred to organic compounds with the formation of hydrocarbons or hydrocarbons-like compounds. The occurrence of bacterially produced hydrogen and hydrogenases may help to account for the absence of olefins and other unsaturates in crude oil.

Liberation of Oil

Under certain conditions sulfate reducers and possibly other anaerobic bacteria tend to dissolve carbonates (limestone, dolomite, etc.). In so doing any oil adsorbed on the calcareous material is set free. When the calcareous material is dissolved, void or pore spaces are formed, thereby providing reservoirs for the accumulation of oil or channels for its movement.

The metabolic activity of bacteria and the dissolution of the carbonate material are accompanied by the production of carbon dioxide Such carbon dioxide may tend to promote the movement of oil by decreasing its viscosity and by increasing the internal pressure in oil-bearing sediments. Bacterially produced carbon dioxide may be most beneficial in forcing reservoir fluids from dead-end traps of microscopic dimensions.

Films of oil are released from the surfaces of sediment particles by certain types of bacteria by physical displacement. Technically such bacteria are spoken of by the microbiologist as being *thigmotactic* because of their marked affinity for solid surfaces. In growing on solid surfaces, thigmotactic bacteria actually crowd off the film of oil or other adsorbed material.

Some bacteria produce detergents or surface-active substances which liberate oil from sediments. The reduction of the surface tension of media in which bacteria are growing from 73 dynes to 50 dynes per centimeter has been observed. When detergents are produced and liberated by bacteria right on the surface of the material holding the oil, the oil is quite effectively released.

The writer believes that by the release of oil by one or more of the above described mechanisms and by the production of carbon dioxide *in situ*, bacteria have played an important role throughout past geological ages in the migration and accumulation of oil in subterranean reservoirs.

Hydrocarbon Oxidation

Continued observations confirm previously reported results[5, 6] that bacteria which oxidize petroleum hydrocarbons are quite widely distributed in nature. Such bacteria appear to be most abundant in marine sediments and in oil-soaked soil.[32] Samples of "paraffin dirt" have proved to be good sources of hydrocarbon-oxidizing bacteria. Only occasionally have such bacteria been found in samples of oil or the associated brine. Nearly half a hundred species of hydrocarbon oxidizers representing a dozen genera have been described.

Natural gas, kerosine, gasoline, lubricating oil, paraffin wax, tars, mineral oil, and crude oils are among the products which are attacked by aerobic bacteria. Among the pure hydrocarbons whose utilization by bacteria has been demonstrated[6, 34, 35] are methane, ethane, propane, pentane, hexane, octane, decane, hexadecane, dicetyl, trimethylpentane, tetratricontane, benzene, xylene, toluene, cyclohexane, anthracene, naphthalene, biphenyl, tetralin, decalin, cetane, phenanthrene, and nearly fifty others.

As a very general rule, aliphatic compounds of the paraffin series are attacked more readily than aromatic compounds of the benzine series. Within the paraffin series, long-chain and branched compounds are attacked more readily than short-chain and normal compounds. The ease with which hydrocarbons within the benzine series are attacked by bacteria appears to be related to the number and length of the side chains.

By preferentially attacking certain kinds of hydrocarbons, bacteria may have altered the properties of crude oil. In certain environments hydrocarbon-oxidizing bacteria may have quantitatively destroyed any oil that may have been there.

It may be significant that most oil-well brines and crudes contain something inhibitory to the action of hydrocarbon oxidizers. The nature of the inhibitory substances has not been determined. Certain heavy metals in relatively low concentration, hydrogen sulfide, and reducing conditions are generally inhibitory. The view is reiterated that oil has accumulated only in those environments where conditions have not been conducive to the action of hydrocarbon-oxidizing bacteria.

Until recently it was believed that only aerobic bacteria were endowed with the ability to utilize hydrocarbons. Now it has been established that certain species of sulfate reducers are able to assimilate aliphatic hydrocarbons of large molecular weight.[36] Decane is only feebly attacked, tetradecane somewhat more energetically, and higher hydrocarbons such as eicosane, docosane, and hentriacontane are utilized quite readily. Neither cyclic hydrocarbons such as benzine, xylene, anthracene, naphthalene, and cyclohexane nor aliphatic hydrocarbons of lower molecular weight than decane support the growth of sulfate reducers. These bacteria are inhibited by relatively low concentrations of vanadium, zinc, or molybdenum.

Importance of Sulfate Reducers

Sulfate-reducing bacteria occur in large numbers in nearly all samples of recent marine sediments which have been examined.[37] They have also been extensively found in oil-field waters.[38-39] That the sulfate reducers have been active in the waters of oil-bearing sediments is indicated by the presence of hydrogen sulfide and the low content or complete absence of sulfates.

Like his contemporaries, Rogers[39] noted that as one approaches oil strata the content of hydrogen sulfide and bicarbonate increases and the quantity of sulfate rapidly diminishes. Exclusive of volcanic regions, the presence of hydrogen sulfide in the deep strata of the earth is often in an intimate way related to the presence of petroleum. Sulfur deposits, which are sometimes associated with petroleum, undoubtedly owe their origin to the activity of sulfate-reducing bacteria.

Petroleum is generally associated with salt water. A significant difference between salt water and fresh water is the concentration of sulfate. Does the concentration of sulfate in sea water account for the fact that oil is usually, if not always, formed in a marine environment?

The aforementioned conditions bespeak the existence of a specific genetic relationship between the activity of sulfate reducers and the formation of petroleum. As pointed out in the preceding sections, sulfate reducers may be instrumental in the synthesis of petroleum hydrocarbons from organic matter. The hydrogen sulfide produced by sulfate reducers may create reducing conditions which are conducive to the formation and preservation of hydrocarbons, and hydrogen sulfide itself may contribute to the hydrogenation of organic matter.

The tendency of certain sulfate reducers to liberate adsorbed oil and to promote its migration and accumulation by the mechanisms outlined above may make the difference between oil-producing sands and oil-bearing sands from which little or no oil can be recovered by ordinary production methods.

Recent observations that certain sulfate reducers attack petroleum hydrocarbons suggests that the activity of these bacteria may cause the modification of already formed petroleum. Since hydrocarbons of large molecular weight appear to be attacked preferentially, sulfate reducers may tend to increase the proportion of light ends in oil. Some credence is given to this possibility by the fact that sulfate reducers have been observed to decrease the density of crude oil samples. The greatest observed decrease in density was on a sample of California crude from 0.849 to 0.802, corresponding to an increase in API gravity of from 26.4 to 35.6. The nature of the transformations is still unknown.

Tausson and Aleshina,[40] who have studied the utilization of hydrocarbons by sulfate reducers, postulate upon a basis of thermodynamic considerations that sulfate reducers may tend to convert hydrocarbons of the paraffin series into polymethylene or naphthenic hydrocarbons, thereby resulting in a heavier oil. Experimental proof is lacking.

Tausson[39] expresses the belief that in the first stage the activity of sulfate reducers contribute to the formation of petroleum, and in the second stage their activity causes a change in the composition and properties of petroleum. Al-

though conclusive proof is lacking, the mounting evidence commands attention.

Lipolytic Bacteria

Sulfate reducers are by no means the only bacteria which may function in the formation of petroleum. Lipolytic or fat-splitting bacteria also appear to be of considerable importance. Fatty substances, which are believed by some to be the principal progenitor of petroleum, constitute an appreciable part of the remains of plants and animals. Fatty acids result from the bacterial decomposition of fats, carbohydrates, and proteins.

Anaerobic bacteria which attack naturally occurring fats and other lipids have been found[40] in samples of recent marine sediments, oil-well brines, asphalt, paraffin earth, and tar sands. These bacteria obtain their oxygen requirements from organic compounds. They hydrolyze fats or triglycerides with the formation of fatty acids and glycerol:

$$\begin{array}{l} CH_3(CH_2)_nCH_2CO-OCH_2 \\ \qquad\qquad\qquad\quad | \\ CH_3(CH_2)_nCH_2CO-OCH \\ \qquad\qquad\qquad\quad | \\ CH_3(CH_2)_nCH_2CO-OCH_2 \\ \text{(Triglyceride or fat)} \end{array} + 3HOH \rightarrow \underset{\text{(Water)}}{}$$

$$3CH_3(CH_2)_nCH_2COOH + \begin{array}{l} HOCH_2 \\ | \\ HOCH \\ | \\ HOCH_2 \end{array}$$

(Fatty acid) (Glycerol)

The **n** represents any number between 1 and 25. From an inspection of the formula, it will be observed that fatty acids are very closely related to hydrocarbons. Their decarboxylation or deoxygenation would result in the formation of hydrocarbons. It has been pointed out on the foregoing pages that sulfate-reducing bacteria produce hydrocarbons from fatty acids. Lipolytic bacteria also seem to be endowed with this ability.

Experiments[40] with various combinations of fatty acids show that two or more fatty acids together are assimilated by lipolytic anaerobes more readily than either fatty acid alone. This suggests that one fatty acid may be reduced (deoxygenated) at the expense of the other which is oxidized as a source of energy. The partial reduction of acetic, butyric, succinic, maleic, lactic, tartaric, and citric acid has been observed. Whether any of these or other organic acids are converted directly into petroleum hydrocarbons by lipolytic anaerobes is yet to be determined.

Methane was the only hydrocarbon observed by Thayer[41] to result from the anaerobic fermentation of a mixture of either diatoms or various fatty acids in marine mud. A liquid oil resembling balkhashite was observed by Strum and Orlova[42] to result from the action of bacteria on fat and palmitic acid. According to Standnikow,[43] lipolytic anaerobes growing on algae and other microorganisms rich in fat produce unsaponifiable compounds including some petroleum hydrocarbons.

In long-term experiments at the Scripps Institution with lipolytic anaerobes growing on the remains of algae, a significant increase in the content of ether-soluble, unsaponifiable, oil-like material was observed.[40] It increased from 0.09 percent to 0.13 percent in 103 days. The supposition is that algal lipids were being converted into hydrocarbons.

In similar experiments reported by Clarke and Mazur,[44] diatoms stored with mud showed a decrease in the amount of free fatty acids and an increase in hydrocarbons. Hentriacontane ($C_{31}H_{64}$) was the predominating hydrocarbon found in the diatoms.

Redox Potential of Sediments

Bacteria are believed to be the principal dynamic agents responsible for the reducing conditions which characterize source sediments. Controlled laboratory experiments have shown that bacteria generally create reducing conditions in nutrient media from which oxygen is excluded. In samples of marine mud, conditions even more reducing than the theoretical hydrogen electrode ($E_o = -0.421$ volt at pH 7.0) have been produced by bacterial activity. This may be contrasted with the redox potential of the theoretical oxygen electrode which has an E_o value of $+0.810$ volt at pH 7.0 and 30° C.

E_o is the E_h of an oxidation-reduction (redox for short) system which is 50 percent in the oxidized and 50 percent in the reduced condition. E_h may be defined as the redox potential of a system with reference to a normal hydrogen half-cell expressed in volts.

Anaerobic bacteria commonly reduce the redox potential of organic-rich sediments to E_h values of -0.4 to -0.5 volt.[3] In so doing, conditions are created which are conducive to the hydrogenation of organic matter and the preservation of petroleum hydrocarbons. Hydrocarbons are attacked slowly or not at all by bacteria in a highly reducing environment.

In a reducing environment, or when the E_h value is negative to -0.1 volt at pH 7.0, the principal gaseous products resulting from the bacterial decomposition of organic matter are hydrogen, hydrogen sulfide, methane, and possibly other volatile hydrocarbons, with only limited quantities of carbon dioxide. In an oxidizing environment bacteria tend to carbonize organic matter or to oxidize it to carbon dioxide. Thus the redox potential of sediments is an important factor in determining the fate and state of organic matter in sediments. According to Porfiriev,[45] bacteria tend to convert organic matter into petroleum in a reducing environment and into coal or carbon dioxide in an oxidizing environment.

Since oil-bearing sands and other petroliferous sediments are generally highly reducing,[46] it is believed that the redox potential may prove to be a significant characteristic of source beds of petroleum.

Summary and Conclusions

It is believed that detailed information on the conditions under which petroleum is formed may provide clues of value to the petroleum geologist in finding subterranean deposits. API Research Project 43A was planned to study stratigraphically the sequence of events and conditions attending the transformation of organic matter in recent marine sediments with particular reference to the role of bacteria. The investigations to date show that there are several ways in which bacteria may have been instrumental in the formation and accumulation of oil.

Living bacteria are widely distributed in sedimentary material. The bacteria are endowed with the ability to affect changes in the chemical composition and physico-chemical conditions of recent sediments. The greatest depth to which such organisms are alive and active is probably limited by the temperature of the earth's interior.

The bacterial production of various hydrocarbons is reported, including methane, paraffinic hydrocarbons in the range of $C_{15}H_{32}$ to $C_{25}H_{52}$, and certain bacterial pigments. Less conclusive are reports of the bacterial production of ethane, propane, pentane, and benzine.

Hydrogen-producing bacteria are abundantly distributed in both recent and ancient sediments. Bacterially produced hydrogen may contribute to the hydrogenation of organic matter, to methane formation, and to sulfate reduction.

One of the most important functions of bacteria in petroleum genesis is believed to be desorbing and promoting the migration of oil. Mechanisms whereby bacteria liberate oil from sediment surfaces and affect its accumulation in pools are outlined.

The ability of certain bacteria to attack hydrocarbons may help to explain the absence of petroleum from environments where such bacteria could be active. Such bacteria may modify crude oil by the preferential oxidation or transformation of petroleum hydrocarbons.

Evidence is briefly reviewed that sulfate-reducing bacteria are associated with oil. Sulfate reducers may be instrumental in the formation, transformation, and accumulation of oil.

Lipolytic bacteria found in source sediments hydrolyze fats and convert fatty materials into substances which are more hydrocarbon-like.

Bacteria create reducing conditions in sediments which are conducive to the formation and preservation of petroleum hydrocarbons.

While unquestionably bacteria have played an important part in petroleum genesis, the author recognizes that geophysical, geochemical, and geological factors are also of importance.

Acknowledgment

This progress report represents part of the activities of Research Project 43A of the American Petroleum Institute. The financial support of the organization and the cooperation of the Advisory Committee is gratefully acknowledged. The technical assistance of Barbara Fay Brown, G. David Novelli, Gregory J. Jankowski William D. Rosenfeld, Josephine B. Senn, and Jean E. Switzer is also acknowledged.

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NEW DIRECTORS OF INDEPENDENT NATURAL GAS ASSOCIATION

Above are 12 of the 21 members elected to the Board of Directors of the Independent Natural Gas Association of America to serve during 1946. The election was held at the Association's anual meeting in Houston January 28. Left to right, bottom row: Clyde H. Alexander of Corsicana, Tex., independent operator; D. D. Harrington of Amarillo, Tex., Hagy, Harrington and Marsh, producers; Homer W. Long of Guymon, Okla., independent operator; J. H. Dunn of Amarillo, president, Shamrock Oil & Gas Corporation; Harry L. Mann of Memphis, Tenn., president, Memphis Natural Gas Company. Top row: Mark Adams of Wichita, Kans., treasurer, Stevens Oil & Gas Company; Burt R. Bay of Omaha, Neb., president, Northern Natural Gas Company; William H. Wildes of Dallas, president, Republic Natural Gas Company; F. S. Kelly, Jr., of Shreveport, La., Arkansas-Louisiana Gas Company; E. C. Joullian of Oklahoma City, president, Consolidated Gas Utilities Corporation; D. A. Hulcy of Dallas, president, Lone Star Gas Company; E. Buddrus of Chicago, president of Panhandle Eastern Pipeline Company.

Officers included Buddrus, president; Paul Kayser of Houston, president of El Paso Natural Gas Company, first vice president; Dunn, second vice president, and F. W. Peters of Tulsa, treasurer of Oklahoma Natural Gas Company, treasurer, all re-elected.

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Oklahoma Hearing Set

Oklahoma State Corporation Commission has set February 26, as the date for considering market demands and to fix the state and pool allowables for March. Hearing is scheduled at 10 a.m., in Oklahoma City. Recent U. S. Bureau of Mines forecasts indicate that with crude and gasoline stocks rapidly increasing, drastic cut-backs by all producing states will be necessary unless all producing states start cutting back on production by not later than March 1.

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PRODUCTION HINTS

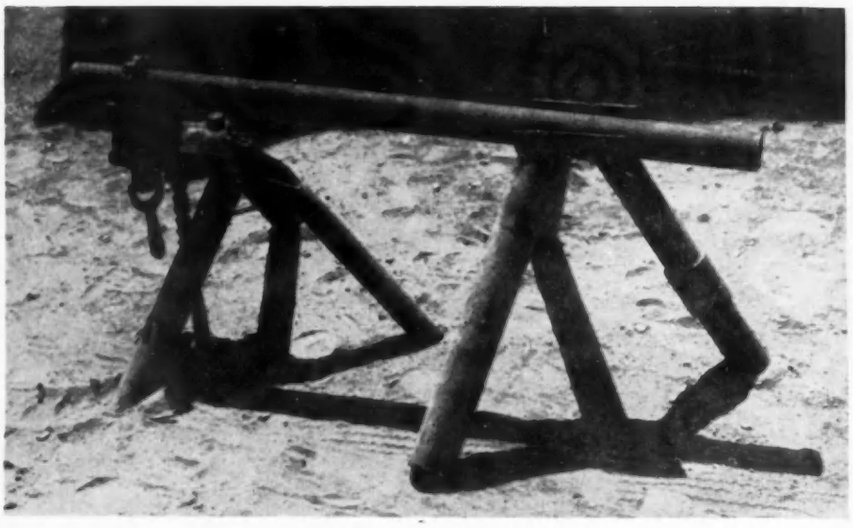
Tripod and Vise Assist in Making Up Threaded Pipe Without Calling for Helper

One of the handiest pieces of equipment on the field truck of one production crew is a two-section vise rack which will support pratically any size or length of pipe that might be used about the well while the former is being cut or threaded. Of particular value when laying well gathering lines, it consists of two short tripods made of 2-inch pipe. The three legs of one section are welded to a short saddle made from a short length of open 4-inch pipe. The other tripod has a steel plate welded to it and on which is bolted a chain vise as shown the vise being faced so as to align with the long axis of the support.

CONNECTION THREADING

Advantages of this type of support include its ease of transporting, it taking up very little room on the truck; ability to extend the two tripods so as to support practically any length or combination of pipes; ease of setting up on rough terrain and at the site of the installation thus elimintaing need for numerous trips between the job and vise-equipped truck.

Height of the tripods is just sufficient to permit unobstructed swing of the thread die handles, yet it is low enough to require only the minimum of heavy lifting for crewmen along the line.

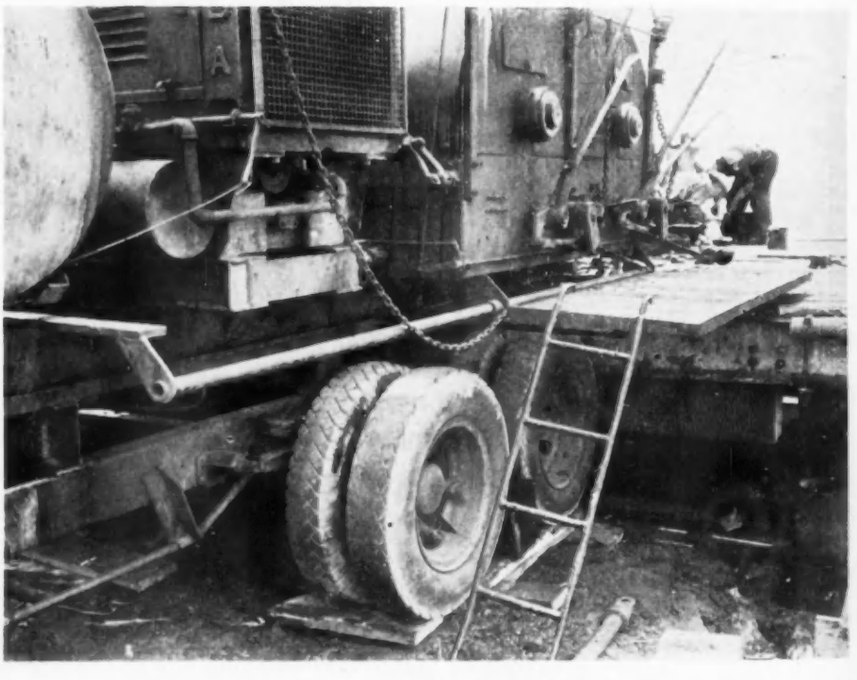


Folding Platform Extends Pulling Rig Working Area

A fold-away platform which may be built and installed on any portable pulling unit consists of one which slides a pipe railing extending along one side of the unit. As shown, the railing or "track" is well supported at several points by heavy brackets welded to the side of the pulling unit and truck frame. The platform itself is held together and supported at each end by heavy flat steel brackets equipped with steel collars slightly larger in diameter than, and which slide along, the railings. By placing the two railing supports which are nearest the unit controls in such a position that the platform can slide only a limited distance in either direction, little time is consumed in positioning the platform.

SERVICING UNIT

Upon completion of the job, the platform is slid forward on the rack until it is clear of the drawworks controls, then folded back against the side of the unit where it is secured until it is rigged up at the next well. No scaffolding is necessary in rigging up and when the unit is folded back against the side, roadside clearance is in no way impaired.



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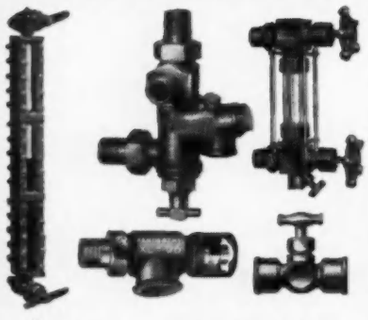

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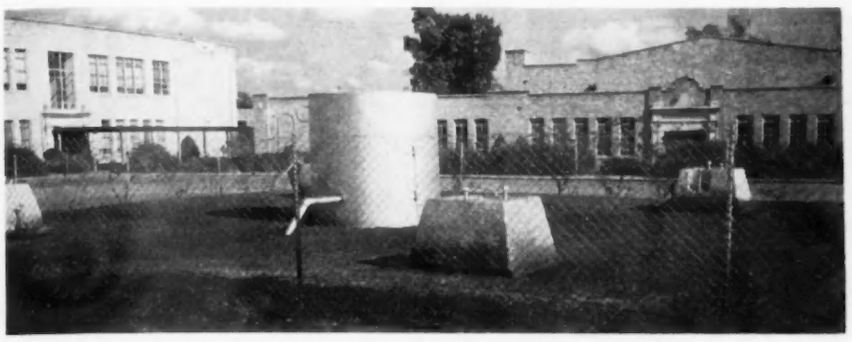
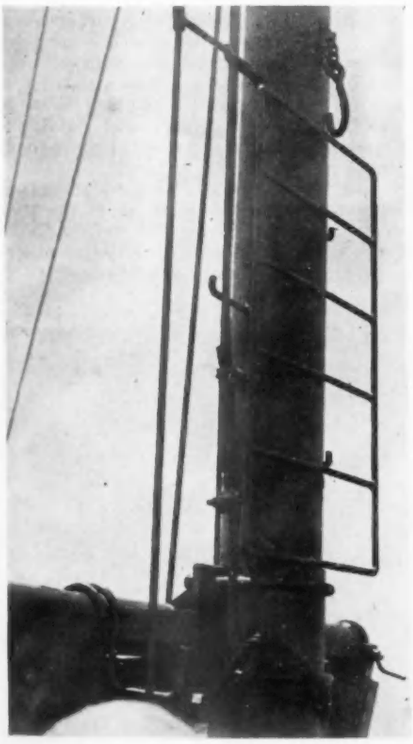


On flowing wells which are near schools or other thickly populated districts, one company prevents tampering with the gate valves on the christmas tree by placing a tight guard entirely over the well head. This guard is constructed from scrap tank iron, and welded up solid with only an opening for the flow line and a door for the switcher. The door is also of tank steel with a bolt hinge on one side and a lock and hasp on the other. A fence also safeguards the well from grazing stock and further protects the well from being tampered with by school children, reducing fire hazards.

WELL PROTECTION

Besides providing definite protection from tampering, this "inverted tank" adds to the appearance of the school grounds and serves to show that the oil company is doing everything possible to make the vicinity of the school a safe place for children.

Rack on Service Mast Carries Guys and Tackle Blocks



To eliminate the need for removing travelling block and lines each time the portable mast-type pulling unit is moved from one well to another, one operator employs a lattice-work structure made of sucker rod matter which is welded to the mast near its base. On completion of the pulling job, the block and lines are pulled back and lashed to the structure, following which the mast may be laid back over the unit in a horizontal position for highway travel. Held tightly against this platform on the mast, the block cannot work loose to slip off and become fouled up with lines and drawworks equipment.

TACKLE STORAGE

The light structure is welded at only six points where the individual bars contact the mast. A hook attached to a short chain welded to the mast just above the lattice-work enables the men to hook the lines together in a single bundle close to the mast while the heavy block is being lashed in place.

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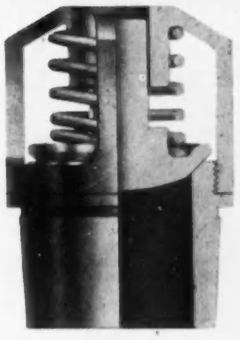

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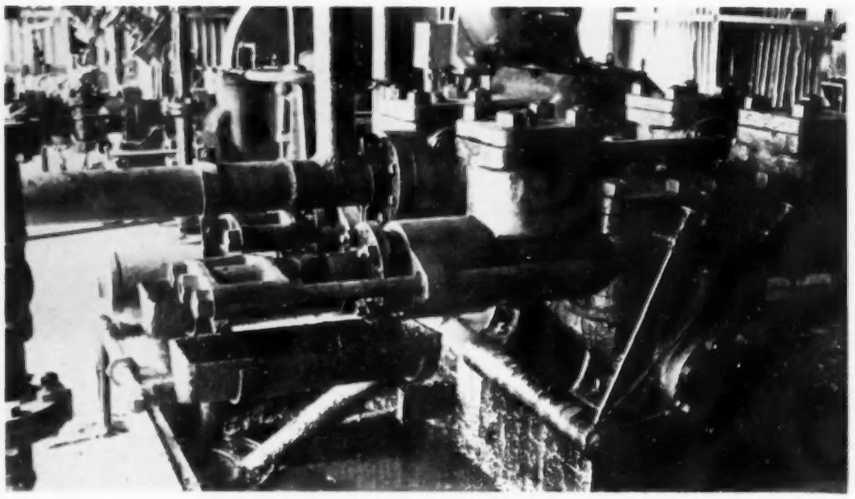
Contributing to cleanlines and over-all better appearance of pipe line pump houses, the waste oil recovery system employed by one company is easily installed and requires little or no maintenance. Along the base of the unit is run a length of 4-inch pipe closed on each end except for small openings into which are inserted small lines coming from bleeder valves in the ends of the discharge cylinders. A central drain from this line empties into a sub-floor sump, where waste is subsequently removed at infrequent intervals.

STATION CARE

Hung beneath each of the pump pistons is a pipe trough to catch drippings, drainings from these containers also running into the common sump. While the installation shown is temporarily undergoing repairs, and oil is smeared over much of the equipment, normal operating conditions reflect the value of this easily-maintained waste oil recovery system.



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Improvised Forms Speed Foundation Pier Construction

Where several warehouse buildings were to be built about two feet from the ground, one company used roofing material held by wire loops as forms for the concrete piers. By taking a piece of roofing about six feet long and rolling it into a cylinder, and then placing wire loops around it, a simple form was made for molding the concrete posts. The cylinders were first set on end and neat cement grout poured in the bottom for a depth of approximately two inches. By the time the set of post bases are poured, the first one has attained an initial set so that it can be filled with concrete without further sealing of the bottom. When the concrete has set, the wire loops are removed and the roofing unrolled from the cylinder of concrete.

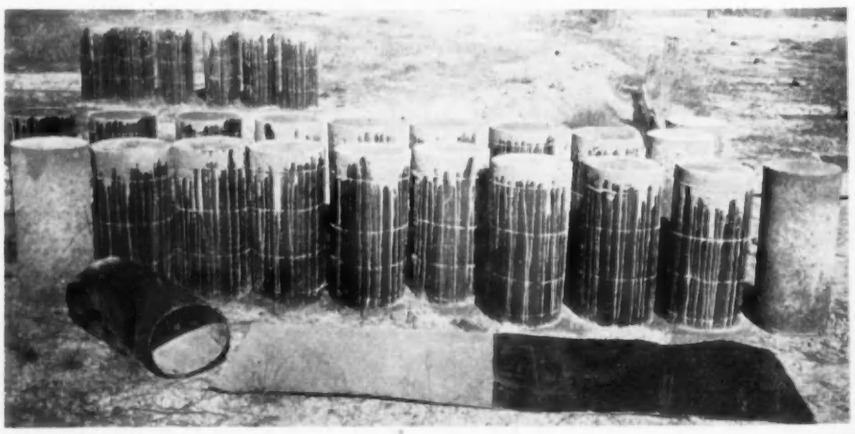
PIER FORMS

Each piece of material and the wire loops can be used over and over several times. Between periods of use, the wire loops are hung on a cleat in the warehouse and the roofing material is stacked flat.

By using the same pieces, but rolling them lengthwise, long thin posts may be formed. By using longer strips, posts suitable for fencing out cattle and other stock may be poured.

When the piers must be cast some distance from the point where they are to be used, it is possible to transport the units at the time of the initial set if the forms be retained in place to serve as protection against impact and the transportation be accomplished without undue vibration.

The roofing material also serves as insulator to prevent chilling of the concrete, and if a cover disk be used, the piers will cure satisfactorily when otherwise freezing damage might occur.



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Buckeye Trenchers minimize right-of-way work. Dig in any soil. Ruggedly constructed. Faster. Readily maneuvered. Model 12 (shown) for gathering, gasoline and small natural gas lines. Models 32 or 48 for main lines. The standard trenchers for pipeline work.

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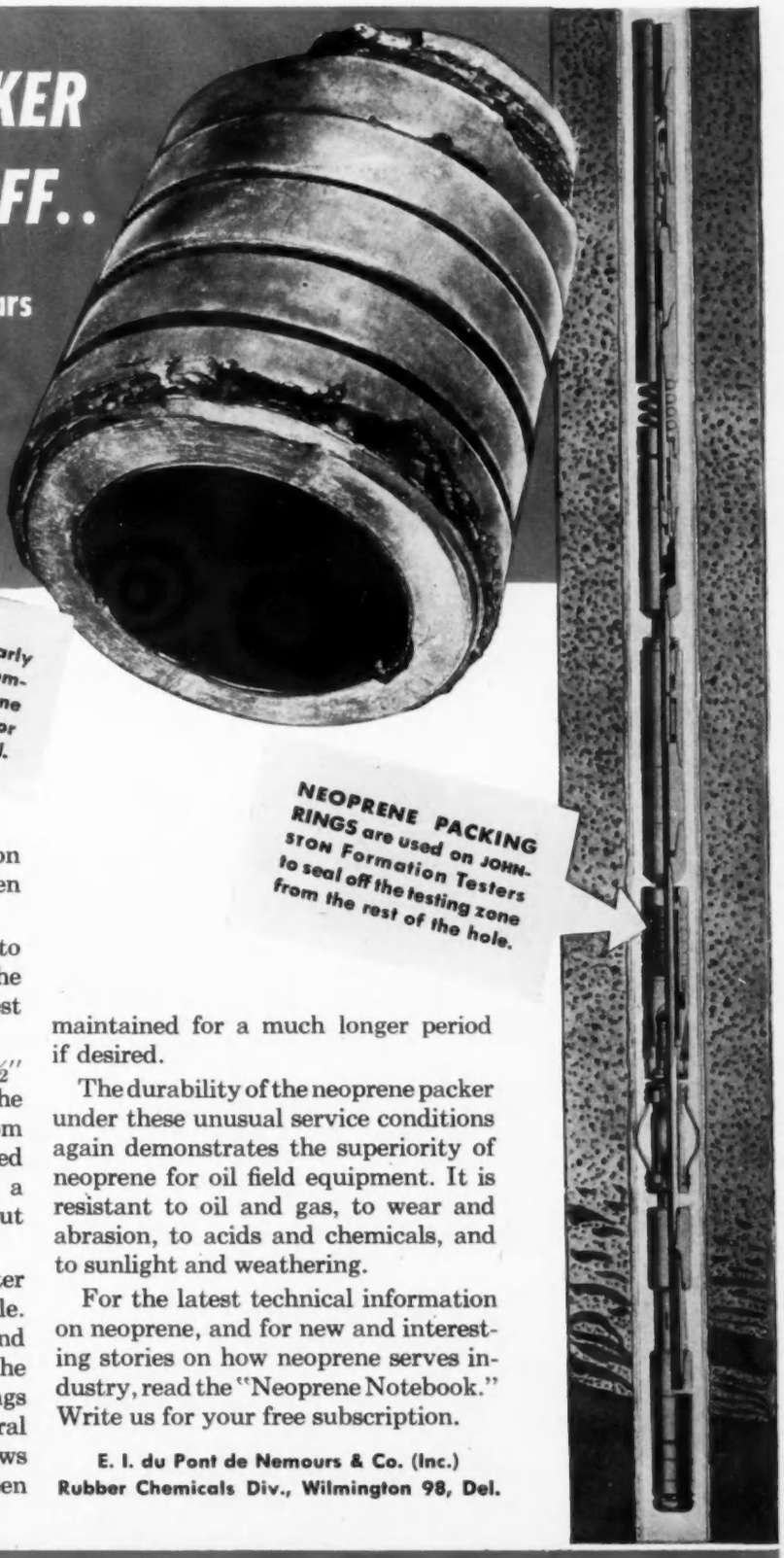
NEOPRENE PACKER SHOWS ITS STUFF..

- ▶ Down the hole nearly 4 years
- ▶ Under 1275 lbs. pressure
- ▶ At about 205° Fahrenheit



IN EXCELLENT CONDITION after nearly four years at 9251 feet in a major oil company well in Lafitte Parish (La.), the neoprene packing rings show they were ready for more years of maintaining a positive seal.

NEOPRENE PACKING RINGS are used on JOHNSTON Formation Testers to seal off the testing zone from the rest of the hole.

TWICE this 9365 foot well flowed on testing but stopped producing when the testing apparatus was removed.

On a third trial, it was decided to leave the tester in the hole while the well flowed. This made a dramatic test of the rugged qualities of neoprene.

Set at 9251 feet on the bottom of 2½" tubing, the neoprene packer on the tester sealed off the lower zone from the rest of the hole. The well resumed flow at 1275 pounds pressure with a packer point temperature of about 205° F.

Three years and eight months later the tester was removed from the hole. The neoprene packing rings were found in excellent condition as shown in the photograph. The upper and lower rings were slightly damaged, but the general condition of the packing rings shows that a positive seal could have been maintained for a much longer period if desired.

The durability of the neoprene packer under these unusual service conditions again demonstrates the superiority of neoprene for oil field equipment. It is resistant to oil and gas, to wear and abrasion, to acids and chemicals, and to sunlight and weathering.

For the latest technical information on neoprene, and for new and interesting stories on how neoprene serves industry, read the "Neoprene Notebook." Write us for your free subscription.

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Production of Fuel Oils Increased And Output of Gasoline Cut Back

Production of crude oil in the United States increased considerably in the week ended February 9, while refinery runs were moderately reduced. The output of principal refinery products was satisfactorily in line with market requirements. Stocks of distillate fuel oil were drawn upon by only 5000 barrels, while the stocks of residual fuel oil were increased by about 470,000 barrels, reflecting increased production of those oils in response to the recent price raise allowed on burning oils by OPA. There was during the week a slowing down of the accumulation of gasoline in storage, as production of that product was cut back.

U. S. production of crude averaged 4,690,000 barrels daily in the week of February 9, API statistics show. That is 81,000 barrels a day more than in the previous week and 39,000 a day or .8 of 1 percent less than the 4,729,000 barrels daily produced in the comparable week of 1945.

Crude runs to stills averaged 4,512,000 barrels daily, down 18,000 from the previous week, and considerably less than crude production.

Stocks of refinable crude were reported by the Bureau of Mines to be 224,351,000 barrels as of February 2. They were over 2½ million barrels over the 221,674,000 barrels reported February 3 last year.

Production of gasoline during the week ended February 9, was 12,854,000 barrels, including natural gasoline blended at refineries, the API reported. That was 987,000 barrels less than last week's production, and 2,525,000 barrels or 16.4 percent less than the comparable week last year. Stocks of finished and unfinished gasoline were increased by 290,000 barrels, raising the total to 103,125,000 barrels. This is a new high for the current year and nears the all-time peak of 109,281,000 barrels in stock for March, 1942. The 103,125,000 barrels of current stocks are 9,770,000 barrels or 10.5 percent more than the 93,355,000 barrels held February 10 last year.

Distillate fuel oil production of 5,650,000 barrels during the week ended February 9 was 14,000 barrels over the previous week, and was 865,000 barrels or 18.1 percent over the corresponding week a year ago. Distillate fuel stocks were lowered by 5000 barrels and ended the week of February 9 at 28,934,000 barrels. That amount was 537,000 barrels or 1.8 percent less than 29,471,000 barrels held February 10 last year.

Residual fuel oil production for the week ending February 9 was 8,630,000 barrels, which was a 124,000-barrel increase over the previous week, but was short 763,000 or 8.1 percent of matching the 9,393,000-barrel production of the comparable week in 1945. Stocks of residual were added to by 469,000 barrels, bringing total stocks to 39,555,000. This was 9,121,000 barrels or 18.7 percent less than the 48,676,000 barrels held February 10 a year ago.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	47,861	11–14	95,857	1– 8
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	47,187	11–27	72,881	1– 2
1944	4,762	9–30	4,798	12–30	240,992	1– 1	89,162	4– 1	48,162	10–28	64,744	10– 7
1945	[1]4,944	7–14	[1]5,140	8–18	227,554	10–13	99,012	3–24	45,341	11–17	56,074	1– 6
1946	4,690	2– 9	4,651	1– 5	224,351	2– 2	103,125	2– 9	35,199	1– 5	42,371	1– 5
Lows:												
1939	[2]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 3
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,382	4–12	90,914	7–13
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–18	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	220,258	9– 9	76,302	1– 1	30,232	4–19	49,737	3–18
1945	3,621	10– 6	3,409	10– 6	[4]211,813	8–25	70,791	10–13	26,483	3–17	38,548	5–26
1946	4,548	1– 5	4,498	1–12	218,193	1– 5	98,494	1– 5	28,934	2– 9	39,086	2– 2

TRENDS OF 1945 AND 1946

Trends in Week Ended:	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,586	42,283
August 25	4,892	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 24	4,469	4,648	219,363	15,681	83,184	4,802	45,258	8,800	47,474
December 8	4,459	4,473	218,355	14,908	87,004	4,669	42,406	8,545	44,743
December 15	4,515	4,562	219,518	14,644	89,043	4,905	40,968	8,107	42,962
December 22	4,480	4,511	220,288	14,768	91,870	4,708	38,919	8,539	41,479
December 29	4,474	4,729	218,918	14,546	95,205	5,055	36,651	8,765	42,447
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 12	4,578	4,498	219,219	14,246	99,574	5,325	33,359	8,223	40,499
January 19	4,606	4,627	219,709	13,979	100,778	5,295	31,403	8,563	40,557
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 2	4,609	4,530	224,351	13,841	102,835	5,636	28,939	8,506	39,086
February 9, 1946	**4,690**	**4,512**	.....	**12,854**	**103,125**	**5,650**	**28,934**	**8,630**	**39,555**
February 10, 1945	4,729	4,820	[5]221,674	15,379	93,355	4,785	29,471	9,393	48,676
Change:									
In week	+81	—18	+3,807	—987	+290	+14	—5	+124	+469
In year	—39	—308	+2,677	—2,525	+9,770	+865	—537	—763	—9,121
In year	—0.8%	—6.4%	+1.2%	—16.4%	+10.5%	+18.1%	—1.8%	—8.1%	—18.7%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, February 3, 1945.

Texas Rail Group Sponsors Casinghead Gas Discussion

The Texas Railroad Commission will sponsor an informal hearing at the Rice Hotel in Houston February 20 to discuss conservation measures in regard to casinghead gas which is now being flared. Results of the hearing will serve as an aid to the commission in formulating future regulations in connection with gas-oil ratios, gas-lift operations and in determining the need for additional forms and orders for the metering of flared gas and lifting gas. The hearing is set for 10 a.m.

Brazilian Attache Named

I. G. Harmon, Texas oil man, formerly production manager for the Marland Oil Company of Texas, and recently with PAW in the Materials Division, has accepted appointment as petroleum attaché to the American Embassy in Brazil and will leave shortly for Rio de Janeiro to take up his new post. The position has been vacant since the resignation of Roderick Crandall about a year ago.

Tennessee Gas Would Hike Capacity Of Texas to West Virginia Carrier

The Tennessee Gas and Transmission Company has filed application with FPC to increase the capacity of its natural gas pipe line from Texas to West Virginia by approximately 40 percent, of which ¾ of the boost is expected to be taken up by waste gas.

The present designed capacity of the 24-inch carrier is 264 million cubic feet daily. The application seeks to increase the capacity an additional 117 million cubic feet daily, bringing total capacity to 381 million cubic feet.

The application seeks to obtain FPC permission to construct three new compressor stations in Victoria and Montgomery counties, Texas, and Natchitoches Parish, Louisiana, for a total of 25,000 horsepower. Also in existing stations 18 new compressor units would be set up totalling 19,000 horsepower. To handle the increased pressure the company seeks to build 410 miles of 26-inch main line loop at intervals along the line.

The application sets out that TGT is now negotiating for casinghead gas from Seeligson, Tom O'Connor, Heyser, and Katy fields, Texas, where waste gas is being produced at the rate of approximately 87 million cubic feet daily, which would be 74 percent of the proposed increase in the line's capacity.

The cost of the new project was estimated at $29½ million by the company, with work to begin if possible by May 1, 1946, with partial completion by December 31, 1946.

West Texas to Port Arthur Loops Completed by Gulf

Gulf Refining Company's 450 miles of loops between West Texas fields and its refinery at Port Arthur have been completed and are now in operation. The loops are facilitating the movement of sweet crude from West Texas to the Gulf Coast refining center.

Following the installation of a new unit in each pump station on Gulf's trunk line, which are on order, the $8 million project will increase the company's Permian Basin outlet to 115,000 barrels daily.

The loops included 303 miles of 10-inch, 63 miles of 8-inch, and 44 miles of 12-inch pipe.

Contractors were J. R. Horrigan Construction Company of Houston, Oklahome Construction Company of Dallas, and Associated Contractors and Engineers of Houston.

FPC Sets Hearing on Plan For Kansas-Nebraska Line

The Federal Power Commission will open hearings in Chicago February 18 on applications of the Kansas-Nebraska Natural Gas Company for authority to construct 77 miles of 16 and 12¾-inch pipe line from Phillipsburg, Kan., to Hastings, Neb., to permit an increase in the amount of gas transmitted through its own lines from the Hugoton field, and about 100 miles of branch or lateral lines to serve Nebraska communities; replace 56 miles of the present system with pipe of smaller diameter, and purchase about 36 miles of branch pipe lines in Nebraska from the Central Electric and Gas Company, at a total cost of $1,575,000.

The company also seeks a permanent certificate ot operate nine miles of pipe line from McCook, Neb., to the McCook Airfield which was constructed under a temporary certificate to meet the wartime emergency.

The application contemplates that construction of the expansion project shall start by next month and be completed by next October.

Sinclair Asks to Salvage 57-Mile Pipe Line in Texas

At a hearing before the Railroad Commission of Texas, Sinclair Refining Company applied for a permit to abandon service on and salvage 57 miles of eight-nich pipe line from the Martha field, Liberty County, to The Pure Oil Company's Smith's Bluff refinery near Nederland, Jefferson County.

Magnolia Contracts to Buy West Texas Crude from Shell

Shell Oil Company has contracted to sell a minimum of 2000 barrels and a maximum of 3000 barrels daily, subject to 30-day cancellation clause, of Ellenburger sweet crude from the Bedford, Wheeler and TXL fields, West Texas, to Magnolia Petroleum Company for one year, starting March 1.

Shell Pipe Line Corporation gathers this oil, and has purchased a 5800-foot section of eight-inch pipe built by The Atlantic Pipe Line Company to receive Ellenburger oil from the same source into its Wink-Midland ten-inch carrier. Shell will extend this unit 1¾ miles south to tie into Magnolia's Wink-Midland ten-inch line. Atlantic began purchasing 1500 barrels of this Ellenburger oil daily in December on contract, with a supplemental purchase of 75,000 barrels for spot delivery late in January, while during February it will take 3000 barrels daily. Shell sells this oil at the posted price, which was advanced to $1.25 for 40-gravity and above by OPA effective January 1, plus 5 cents per barrel gathering tariff.

Dow Awards Contract

Dow Chemical Company has awarded contract to the Latex Construction Company for 15 miles of 10¾-inch fresh water and brine line from Freeport to Stratton Ridge in Brazoria County, Upper Texas Coast.

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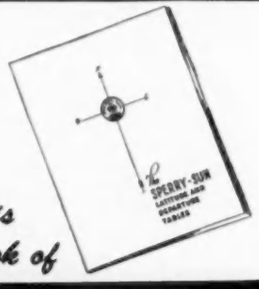

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Zionist Developments May Result in Middle Eastern Oil Repercussions

Mounting clamor for establishment of a Zionist state in Palestine may have repercussions jeopardizing American petroleum interests in the Middle East. The recent Arab general strike in Jerusalem in protest against the announced British policy of allowing Jewish immigration into Palestine at the quota rate of 1500 monthly, has highlighted the Arab decision of non-cooperation with the zionist cause. At the recent Cairo conference between Egyptian King Farouk and King Ibn Saud of Saudi Arabia it indicated that Ibn Saud is prepared to assume the role of Pan-Arab mentor and bargain off his power against both Britain and the United States.

There have been reports that Ibn Saud may even go so far as to expropriate American oil properties in Saudi Arabia. Such a measure was reported by Clifton Daniels, New York *Times* correspondent in Cairo. However, industry officials who know King Ibn Saud doubt that he will so cut off his nose to spite his face, American revenues being too important to throw over even in the cause of pan-Arabism.

Possible Reprisals

But short of expropriation, there are several reprisals which Ibn Saud could take against American petroleum interests. For instance, he could join the sterling currency block. This would be a serious blow to American expansion in Arabia. Right now Saudi Arabia, a non-sterling country, is surrounded by eight contiguous sterling nations. Hence, financially, Ibn Saud is a key figure in Eastern trade.

Second, Ibn Saud could surround himself with British technical advisers and thus freeze out American influence. With the increasing rivalry of Britain and the United States in the Middle East, this action on the King's part would be damaging to American oil expansion abroad.

Third, the King could wink at tribal depredations against American oil properties. This has been done in the past elsewhere and has proved annoying and costly. At the present time a high degree of order prevails throughout Arabia. In Saudi Arabia this current order is maintained only through the power of Ibn Saud.

Troops to Arabia?

It is known that the Near Eastern Division of the State Department is unsympathetic to Zionist political aspirations, despite the Truman administration's support. Some observers believe that if the United States follows through on its declared pro-Zionist policy, we shall be forced to send troops to Arabia to protect American interests.

The National Association of Manufacturers recently urged a ban on government lending of U. S. funds to nations that confiscate or threaten to confiscate any property of U. S. nationals in occupied countries. This policy might be extended, it was pointed out, to the Middle East as a preventive move against seizure of American petroleum properties there.

Gas Line from Lispe Fields In Hungary Is Proposed

A proposal to construct a natural gas pipe line to supply approximately 282,400,000 cubic feet of gas annually from the Lispe oil fields to Budapest, Hungary, has been submitted to the municipality by "a foreign company," a European chemical publication has reported. The cost of $2 million would be met by the company which would have a concession for 99 years for the gas supply.

Zistersdorf Production Receives Sharp Cutback

The Zistersdorf oil fields in Austria are producing an average of 1300 tons (8840 barrels) daily, according to an official Austrian report.

Present production is at the rate of about 3,226,600 barrels annually, as compared with the 9,758,536 barrels estimated to have been produced during 1944. This apparently is in keeping with suggestions of the Minister of Commerce to throttle production at Zistersdorf "to prevent early exhaustion owing to forced exploitation."

The Austrian report said gas produced with the crude oil is being used partly for fuel purposes in the field with the remainder piped to the Vienna gas works.

Second Test Is Planned In Chile's New Oil Field

Preparations are being made to spud the second test in the recently opened oil field in the District of Majellanes, Chile. The test is the Compania de Fomento de la Produccion's Spring Hill 2, on the Isla Grande, Tierra del Fuego.

The second test is about ½ mile north of the discovery well, which has indicated a flow of 200 barrels of oil daily through a ¼-inch choke from sand at 7419-38 feet. At last report, Spring Hill 2 was rigging up. George Livermore Corporation of Lubbock Tex., who drilled the dsicovery well, is the contractor.

Safety Program

Under auspices of the Insurance and Safety Committee of The American Association of Oil Well Drilling Contractors a safety conference was held in Shreveport February 12 when a program in relation to reduction of accidents and lowering of insurance costs was discussed, and plans were formulated for putting in effect a definite accident control program.

☆ Oklahoma

Wilcox Pool Near Arcadia Is Proven by Sinclair Prairie

Wildcat proves new Wilcox zone pool near Arcadia; test north of Hoover in Murray County shows heavy oil in shallow horizon; long extension looms for East Altus pool; Oklahoma Natural sets big pipe in interesting Western Oklahoma test.

Logan County: Sinclair Prairie Oil Company et al's Teuscher 1, SE SE SW 34-15n-1w, has opened a new pool north of Arcadia. Flow, estimated at 600 barrels daily, natural, was through open 2½-inch tubing from the Wilcox sand between 5929-41 feet, total depth. Initially the wildcat swabbed 50 barrels of oil in 4 hours then kicked off to flow 138 barrels in 5 hours, the oil testing 37 gravity. The well is about 3 miles from the Northeast Arcadia pool, a Wilcox sand reservoir. The first Wilcox sand was explored unsuccessfully and thus the Teuscher is one of the few wells in Oklahoma to drill unproductive First Wilcox and complete as a commercial producer in the Second Wilcox sand. The discovery well is on a unitized block with associate firms including Phillips Petroleum Company, Mid-Continent Petroleum Corporation, British-American Oil Producing Company, Big Four Drilling Company and Roy M. Smith, H. M. Russell, J. E. Piersol and Lillie M. Piersol.

Dewey County: Because of recent interest manifested in Western Oklahoma, the Oklahoma Natural Gas Company's Oakwood Unit 1, NW NW NW 6-17n-14w, is being closely watched by operators. Top of the Herrington lime was logged at 3590 feet and electrical log run to 3643 feet, results of which were not revealed. Operator spotted 30 sacks of cement at 2650 feet, indicating a water horizon at that depth where circulation was temporarily lost. The hole was reamed to 2698 feet where 13½-inch pipe was set and cemented. Dewey County is void of production and apparently in the trough of the Anadarko Basin where producing sands are expected to be encountered at depth.

Murray County: Helmerich & Payne, Inc.'s Sadler 1, SE NW NE 29-1n-1e, wildcat about 2 miles north of Hoover and about a mile southwest of the Butterly gas field, logged a show of heavy oil at 1970 feet and from an unidentified horizon but presumably the Pennsylvanian. The oil tested 27 gravity and covered the pits as crews cleaned out the hole. The first show was reported at 1930 feet indicating a possible 40-foot section of saturation. The hole is projected to at least 3000 feet and geologists are trying to determine the source of the oil show. The wildcat is about 1½ miles southwest of an old test drilled in 1928 and which was reported to have produced as much as 100 barrels of oil per day before being abandoned.

Jackson County: A long extension or possibly a new pool looms at The Texas Company's Hickman 1, SW NW NW 6-1n-19w, about 2 miles northwest of the East Altus pool. Operator pulled an 8-foot core recovering 15 inches of soft Granite Wash with oil stains and the balance a hard Granite Wash with no shows. The discovery well of East Altus produces from Granite Wash at 1419-33 feet. The Hickman is east of the old Altus pool, a Granite Wash reservoir discovered about 12 years ago by Gypsy Oil Company.

Seminole County: Globe Oil & Refining Company's Davis-Patterson 1, SW SW NW 22-9n-7e, 2½ miles southeast of the East Seminole pool is the discovery well for an important Cromwell sand field to continue the string of successes registered in recent months in the old Seminole areas. After testing for several weeks the wildcat was finaled for an estimated 22 million cubic feet of gas plus 100 barrels of oil per day from 20 feet of Cromwell topped at 3430 feet. Total depth is 3450 feet.

Southeast of the Traugh area, Big Chief Drilling Company's Mathis 1, NW NW SW 35-6n-6e, was dry and abandoned at 2486 feet, total depth, after getting water in the Cromwell from 2390-2417 feet. A slight oil show was logged in the Thurman at 2002-6 feet.

Coal County: Two gassers, one a blowout when the pay zone was topped, were reported from the Coal County extension to the Jesse pool. Continental Oil Company's Brown 1, NW SE SW 7-1n-8e, topped the Wilcox sand at 4635 feet where gas broke in and blew tools up the hole. Well was shut in while crew worked to dislodge tools at 4410 feet. Ashland Oil & Refining Company's Wood 1-B, NW SW SE 7-1n-8e, was completed for 5 million cubic feet of gas daily through casing perforations between 4419-46 feet after testing salt water between 4644-85 feet.

☆ Kansas

Merten Pool, Barton County, Is Given Possible Extension

Several prospective pool extensions listed; Phillips County wildcat opens Logan field; good producer noted for Kraft-Prusa pool; Stanolind reports oil stains in Lansing lime in Seward County wildcat.

Barton County: Virginia Drilling Company opened a possible extension to the Merten pool in central west Barton County when Howell 1, SE SE NE 36-18s-15w, swabbed from 5 to 7 barrels of oil per hour in a short test. Arbuckle was topped at 3494 feet and total depth is 3496 feet.

Anderson-Prichard Oil Corporation and Mercury Drilling Company, Tulsa, completed a good well at Seyfert 1, NW SE SE 21-16s-11w, Kraft-Prusa pool. The well was reported flowing more

Wells Completed in United States in Week Ended February 16, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama													3	3
Arkansas									2	2	2	4	21	18
California												30	226	265
Colorado												4	14	6
Florida												1	4	1
Georgia														1
Illinois	23			4	27				5	5	32	43	184	233
Indiana	3			1	4		1		2	3	7	7	35	34
Iowa														1
Kansas	19	7		8	34	2			4	4	40	47	293	169
Kentucky	3			2	5				5	5	10	6	61	77
Louisiana	11			4	15		2		4	6	21	22	157	129
North Louisiana	5			2	7				2	2	9	14	84	47
South Louisiana	6			2	8		2		2	4	12	8	73	82
Michigan	6	1		4	11				4	4	15	20	95	98
Mississippi	3				3						3	4	31	46
Missouri													1	7
Montana												9	38	22
New Mexico	5			1	6						6	12	56	68
New York	15		10		25						25	25	175	93
Ohio													16	92
Oklahoma	23	6		7	36	2			4	4	42	40	351	292
Pennsylvania	27		15		42						42	42	316	313
Texas	94	4		20	118	8	4		29	33	159	148	1,037	884
E.Tex.Bor.Co.'s		3			3						3	4	26	5
Rest of E. Texas	8				8				5	5	13	8	63	28
North Texas	20			12	32				5	5	37	34	280	223
W. Central Tex.	5			1	6	1			2	2	9	10	89	40
West Texas	24	1		2	27	2			8	8	37	31	211	234
Tex. Panhandle	3			2	5	5					10	12	66	77
G. Coast, Upper	5			3	8		3		5	8	16	24	103	82
G. Coast, Lower	22				22		1		2	3	25	19	146	127
Southwest Texas	7				7				1	1	8	5	42	61
S. Central Texas									1	1	1	1	11	7
West Virginia													55	91
Wyoming												8	20	18
Total U. S.	232	18	25	51	326	12	7		59	66	404	472	3,189	2,961

* Includes distillate wells. † Includes salt water disposal wells.

than 9 barrels of oil an hour from the Arbuckle lime at 3357-69 feet. Seyfert 4, SE SW SE Sec. 21, is drilling below 1650 feet.

Cowley County: An extension to the Deichman pool in Western Cowley County was made with Ben Grallapp et al's Deichman 1, NE SE NW 23-31s-4e. This well, located ½ miles west of production in the Deichman pool and 2 miles east of prolific Hittle pool production, has a flow potential of 300 barrels daily. Production is from the Bartlesville sand, topped at 2930 feet, and total depth is 2971 feet.

Another pool extension in Cowley County is Ed Adair's Sandstrum 1, NE NE NE 14-30s-5e, an extension to the Couch pool. The well has a potential of 200 barrels of oil per day from the Bartlesville sand encountered at 2784 feet. Total depth is 2824 feet.

Seward County: Stanolind Oil and Gas Company's Adams Gas Unit 1, CN½ S½ NW 14-35s-31w, cut the Lansing lime at 4526 feet and stains were logged at 6150-90 feet. Operators cored after encountering the stains. The wildcat is 3 miles southwest of Stanolind's discovery well in the Adams Ranch gas pool of Meade County.

Phillips County: Two miles northwest of the Hansen pool, Helmerich & Payne, Inc. and Tide Water Associated Oil Company's Bowman "A" 1, NW NW SE 3-5s-20w, was filled with oil that was slopping over the casing after treating a Kansas City lime show with 500 gallons of acid. Operators had previously attempted to complete this test in the Arbuckle. Casing was perforated from 3172 to 3178 feet before acidizing. The Lansing-Kansas City was topped at 3083 feet.

☆ New Mexico

Test East of Penrose-Skelly Field Has Glorietta Flow

Prolific oil flow from Glorietta uncovered on east side of Penrose-Skelly field; deep pay in Drinkard field extended north; development of Brunson-Ellenburger area expands north and east.

Lea County: Gulf Oil Corporation's Hugh 1, C NW NW 14-22s-37e, ½ mile east of 6400-foot Yeso production, flowed at the rate of 50 to 60 barrels of oil hourly, with gas volume rated at 1,438,000 cubic feet daily, when tester was used at 5065-5220 feet. It will continue to the Yeso, and was drilling lime at 5560 feet. This production came from the Glorietta, topped at 5025 feet with elevation 3376 feet, and correlates 34 feet high to Rowan Drilling Company's Elliott 2-B-15, west offset that was showing small amount of oil and water after acidizing 2 zones of perforations between 5117 and 5219 feet.

The Texas Company's Blinebry 3, ¼-mile north extension for the Lower Yeso sector of the Drinkard field, flowed 396 barrels potential, with 3 percent bottom sediment and water and gas-oil ratio of 2250/1, through choke after using 27,000 gallons of acid in broken pay at 6915-95 feet.

Repollo Oil Company has entered the Brunson-Ellenburger sector of the Penrose-Skelly field in starting Brunson 4, SW SW SE 4-22s-37e, ¼ mile north outpost. Magnolia Petroleum Company's Brunson-Argo 10, east offset to the deep discovery, entered the Simpson shale at 7365 feet, and was drilling at 7480 feet, while Brunson-Argo 11, an east outpost, was drilling at 2250 feet.

Recognition of the costs involved in drilling wells to the deeper zones has been made by the New Mexico Conservation Commission in granting higher allowables effective March 1. Wells producing from the 5000 to the 6000-foot level will be increased to 52.2 barrels daily as compared with an allowable of 40 barrels daily. Progressive increase occurs at 1000-foot intervals to a maximum of 226.8 barrels daily from wells completed below 11,000 feet.

Western Gas Company and Olsen-Blount Drilling Corporation's Eaton 1, C SW SW 12-25-37e, east offset to a 4800-foot discovery gasser, tested water when acidized at 4913 feet, and will be plugged back to the gas zone.

Eddy County: Grayburg Oil Company's Keely 10-A, C NW NE 24-17s-29e, projected Pennsylvanian test for the north edge of the Grayburg-Jackson field, entered the San Andres at 2650 feet, and was drilling lime at 3210 feet. This is the only active Pre-Permian test in the county.

☆ West Texas

Hendrick Ordovician Test Has Permian Base at 8280

Hendrick field's first Ordovician test logs base of Permian at 8280 feet, being lower structurally on deep formations than other Ordovician-producing areas in county; deep-seated Ellenburger discovery southeast of TXL field fulfills earlier production outlook on official gauge.

Ector County: The Texas Company's T. P. Land-Fraser 1-F, C NW SW T&P 39, Block 45, T-1-N, will try for a 2¼-mile north extension to the TXL field with the Ellenburger as its prime objective. It is ¾ mile northeast of an Ellenburger failure that showed some oil in the Devonian, but lacked structural position to pay off in the Ellenburger. The new test is on a lease that requires production by July 18. Texas' T. P. Land-Fraser 1-D, a mile southeast of the TXL-Ellenburger field and producing from a separate reservoir due to a pronounced fault, was rated at 1697 barrels of 41.9-gravity oil, with gas-oil ratio of 531/1, on natural test through ½-inch choke from perforations at 10,790-890 feet. It reached formation water in drilling to 10,975 feet. Top of Ellenburger correlates 1162 feet low to Mid-Continent Petroleum Corporation's T. P. Land Trust 1-D, most southeasterly field well that was completed recently flowing 805 barrels of 43-gravity oil and 110 barrels of water through ¾-inch choke after acidizing perforations at 9795-9835 feet after plugging back from water at 9979 feet. The latter cut the fault in the Simpson, and is the 14th producer for the regular Ellenburger area.

Stanolind Oil & Gas Company et al's Scharbauer 3-Q, new pay discovery for the north edge of the Goldsmith field, flowed 13 barrels of oil and 2 barrels of fresh water through open tubing in 5½ hours and quit. This production is from perforations at 6200-90 feet in Clear Fork (Tubb) porosity, topped at 6172 feet. Higher perforations may result in a steady flow. A commercial producer will stimulate deep drilling in the heart of the field, as one of the largest lease owner's operating rights are automatically terminated in 1975, regardless of remaining crude reserves.

Cochran County: Gulf's Taylor 1, 1¼ miles north of the Landon 2-well pool, swabbed 9 barrels of oil and 32 barrels of water after using 5000 gallons of acid in broken San Andres at 5000-5149 feet. It will be plugged back for further testing.

Reeves County: Argo Oil Corporation's Roberts 1, C NW SE H&GN Ry. 294, Block 13, an Ordovician project for the Delaware Basin, entered dry Leonard (Basal Permian) lime at 7840 feet, and was drilling lime at 9095 feet. Comparatively few tests have been drilled through the Permian in this basin area. Continental Oil Company's Collier 1, C SW NW H&TC Ry. 180, Block 1, was changing to cable tools after landing pipe on bottom at 5259 feet in dry Delaware lime, topped at 5253 feet with elevation of 2884 feet.

Pecos County: G. F. Aldrich et al's State Nat'l Bank 1, 1¾ miles south of the Apco-Warner deep area and separated by failures, tested a nominal show of oil and gas after using acid in open hole at 4585-4682 feet in Ellenburger, topped at 4590 feet. The hole was plugged back from granite at 4730-45 feet, and will be plugged back again and reacidized. Gulf's White 1-E, 2¾ miles west of the Tobarg shallow field, was drilling shaley-lime at 7764 feet in the Simpson. Phillips Petroleum Company's Elsinore 1, also an Ellenburger project, was drilling sandy-lime and shale at 12,020 feet.

Andrews County: Gulf's University 1-Z, C NW NE Section 42, Block 13, and an east offset to confirmation producer for the South Fullerton field, emphasized the possibilities of production from the Clear Fork as well as the Devonian regular pay in recovering 5000 feet of oil- and gas-cut mud when tester was used at 6818-6930 feet. Second test at 6925-7005 feet yielded 850 feet of 32.3-gravity oil and 200 feet of oil- and gas-cut mud, while test at 7005-80 feet returned 50 feet of free oil and 90 feet of water. This upper pay was indicated by the offset, materially stimulating interest in the area. Gulf is proceeding to the 8600-foot Devonian. Phillips' University 1-M, same area, was drilling lime at 6340 feet.

Magnolia's Martin 2, 3¼ miles southwest of the above area, tested water in Silurian, topped at 9960 feet, and was abandoned at 10,414 feet. Placid Oil Company and Gulf's Thornberry 1-F, Ordovician prospect, was drilling lime at 8656 feet without shows. The Atlantic Refining Company's University 1-A, 1⅞ miles southeast of the Martin 2-pay area and lower structurally, missed the Basal Clear Fork oil zone, and was drilling at 7325 feet. The lease requires production by November 14.

Crane County: Atlantic's University 1-L-31, a mile north of its Block 31 field 2-pay discovery, was preparing to perforate opposite saturation in the Devonian, topped at 8160 feet, or 258 feet low, after reaching water in Silurian section that was drilled to 9249 feet. Most effective oil pay was logged near the 8900-foot level, while the discovery logged about 500 feet of pay in the Devonian. Atlantic is operating 15 rigs,

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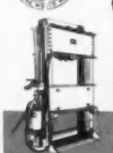
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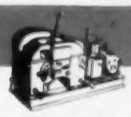
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with one engaged in reworking an old Ellenburger failure, and is rigging up for 2 new tests. Phillips and Champlin are drilling 1 test each, making a total of 17 operations in a 1-well field.

Winkler County: Drilling time in the Keystone-Ellenburger field continues to be shortened as development proceeds, and a new record was set by Richardson & Bass, Inc.'s Walton 19-E in taking official gauge in 3 months and 16 days after spudding. This east side test flowed 2249 barrels of 43-gravity oil, with gas-oil ratio 132/1, through ½-inch choke from open hole at 9687-9900 feet in Ellenburger, topped at 9650 feet. It has an allowable of 579 barrels daily. Early wells averaged 9 months drilling time, and the average has been cut to 4½ months.

Texas Pacific Coal & Oil Company's Brown-Altman 1, Account 4, Glorietta lime discovery between the Weiner and Emperor Deep areas, was drilling dry lime at 5935 feet, with the Clear Fork zone expected near this level. Stanolind and Westbrook-Thompson Holding Corporation's Hendrick 35-A, first deep test for the Hendrick field, was drilling in lime and chert at 8695 feet. No shows of any consequence were logged below the San Andres.

☆Central West Texas

Shackelford Test Has Good Ellenburger Oil Showing

Shackelford County wildcat has favorable oil showing in Ellenburger; another prospect is a failure after drilling to Cambrian; Palo Pinto County deep wildcat acidizing Elenburger.

Palo Pinto County: Ashland Oil & Refining Company's Lee 1, TE&L Co. Sect. 1744, was making swabbing test after acidizing Ellenburger saturation at 5040-50 feet.

Shackelford County: Allied Oil Company's Sanders 1, east corner of TE&L Co. 583 and 4 miles northeast of Albany, entered the Ellenburger at 4508 feet with elevatoin of 1355 feet, and filled 1500 feet with oil in 2 hours after drilling soft Ellenburger dolomite at 4535-36 feet. Pipe will be set to try for completion. This wildcat passed up oil and water in the Mississippian, topped at 4418 feet.

Eltex, Ltd.'s Merrick Davis 1-A, NE SE T&P Ry. 30, Block 12, and a twin to the firm's 5218-foot junked Ellenburger test, was abandoned at 5808 feet in Cambrian, topped at 5602 feet. It is probably the first test in the county to drill through the Ellenburger, entered at 5004 feet with water at 5190-5210 feet.

Jones County: Humble Oil & Refining Company's Riley Horton 1-B, offsetting 3200-foot production in the Noodle field, entered the Ellenburger at 5400 feet, with elevation 1812 feet, and reached water in drilling to 5618 feet. The hole was plugged back to complete in one of the field's regular oil zones.

Laboratory Planned

Sinclair Refining Company has announced plans for a petroleum research laboratory at Harvey, Ill. The new laboratory will provide larger quarters for the research and development department which is now located in the East Chicago area.

☆North Texas

Young County Test Has Prolific Flow from Bend

Young County records prolific strike from the Bend; Crain field defined to the north; Ellenburger test in Sivels Bend field plugging back from bottom-hole water, and Strawn failure on north end.

Young County: Hanlon & Buchanan, Inc.'s Kendall 1, SE NW Sect. 4, J. C. Crosby Survey A-1722 and 1½ miles south by west of production, flowed 43 barrels of oil per hour, with gas-oil ratio of 1750/1, natural through 2-inch from Bend saturation at 3466-81 feet. A flush producer was indicated by drill-stem tests. Outlying failures are of sufficient distance to permit a substantial producing area.

Hedrick Brothers and J. V. Howell's Dunagan 1, southeast corner of TE&L Company 170 and ⅓ mile north of the Crain pool discovery, proved dry in the Mississippian at 4992-5005 feet, and has perforated at 4320-50 feet to try for a pumper in the Bend. This Mississippi failure is about midway between the main pool and the new producing area to the north, with the latter involving a deeper seated structure.

Cooke County: Standard Oil Company of Texas' Beasley 2, prospective Ellenburger producer for the south portion of the Sivels Bend field, tested salt water with a trace of oil from open hole at 9090-9164 feet. The hole will be plugged back to perforate at 9050-59 feet, while the best showing in the dolomite, topped at 8640 feet, was at 8905-34 feet. Sinclair Prairie Oil Company's Thomason 3, north end of the field, was slated to be temporarily abandoned after testing dry in the field's Lower Strawn sand at 7604 feet.

Grayson County: Denver Producing & Refining Company's Jewell 1, deepened Strawn discovery that indicated probable oil production from the Oil Creek sand at 8568-8545 feet, was drilling dry lime at 8840 feet to explore the Ellenburger before setting liner for production test.

Archer County: Helmerich & Payne, Inc.'s Wilmot 3, northwest corner of G. N. Smith Survey and ⅓ mile south of the Daume field, was abandoned at 4340 feet. This 4000-foot Strawn area has accounted for 29 flowing and pumping wells that were preceded by nearby failures that ordinarily would have discouraged further explorations.

☆East Texas

Shows Are Registered by Bowie and Rusk Wildcats

Wildcats in Bowie and Rusk counties have nominal shows in Smackover and Travis Peak, respectively; high structural position of Van Zandt County deep prospect precipitates lease and royalty play in Wills Point area; first oil producer for the Opelika deep gas-distillate field flowed 10 to 12 barrels of 42-gravity oil hourly through 3/16-inch choke on preliminary test.

Rusk County: Delta Drilling Company's Rayford 1, James Smith Survey and 2 miles south of Henderson, entered the Travis Peak at 7303 feet with first evidence of porosity at 7340 feet. Core pulled at 7350 feet yielded some oil staining and odor in broken sand. Another core will be taken before making drill-stem test. This prospect is on acreage farmed out by Danciger Oil & Refineries, Inc., and others.

Van Zandt County: V. J. Meyer and Danciger's Meredith 1, R. C. Morris survey and 5 miles northwest of the Myrtle Springs 2-well pool, showed considerable thinning of the section below the Woodbine in drilling at 5647 feet. A fishing job developed at this level, and may require a sidetrack job. The Woodbine was entered at 4044 feet and the Fort Worth lime at 5317 feet, with elevation of 512 feet. Owners have a 3500-acre supporting block. The next possible oil producing zone would be the Paluxy, which is due near the 5800-foot level.

Bowie County: Barnsdall Oil Company et al's Pickering 1, 4 miles southwest of Texarkana, was due to make a drill-stem test after sidewall cores taken in the upper part of the Smackover, topped at 7032 feet, showed evidence of gas and distillate. The well is bottomed at 7087 feet with some junk in the hole. This wildcat entered the Cotton Valley at 5865 feet, and the Buckner at 6874 feet with elevation of 299 feet.

Henderson County: Lone Star Producing Company's Buckalew 1, near center of 53-acre tract, Adrian Anglina Survey, is showing for an oil producer on the northwest side of the Opelika gas-distillate field while attempting to dual complete. This structurally-low outpost made a steady flow of oil with more than 500,000 cubic feet of gas on natural test from Rodessa perforations at 8827-49 feet. Having confirmed a producer from this zone, perforations were made at 9351-89 feet in the Pettit, topped at 9349 feet with elevation of 454 feet. Multi-acid treatment is under way with the well showing gas-distillate production from the lower zone. The well is bottomed at 9500 feet. Delta Drilling Company's Livingston 1, Nacogdoches University Survey 10, was slated for abandonment after swabbing a small amount of oil with salt water from Sub-Clarksville perforations at 4002-10 feet. This wildcat also tested a small amount of gas-distillate from Gloyd in drilling to dry Travis Peak at 8642 feet. The information will serve as inducement for an additional test in the area.

Smith County: Humble Oil & Refining Company's Ramey 1, J. G. Garrett Survey and 2100 feet east of production in the Sand Flat field with an intermediate failure, flowed 48 barrels initial through ¼-inch choke from Paluxy perforations at 7085-7102 feet. Humble's Griffin 1, Seaborn Smith Survey and in the north sector of the field, pumped 23 barrels of 22-gravity oil initial from the lower sand perforations at 7580-94 feet.

Phillips Petroleum Company's Hughes 1, which passed up promising oil saturation in the Paluxy, topped at 7480 feet to indicate a shallowed pay for the South Tyler field, was changing to a heavier rig at 7600 feet.

Humble Pipe Line Directors

The stockholders of the Humble Pipe Line Company in their annual meeting February 4 elected R. V. Hanrahan, O. Q. Lomax, C. D. Voss, L. E. Grissom and W. N. Jones, Jr., to serve as directors for the coming year.

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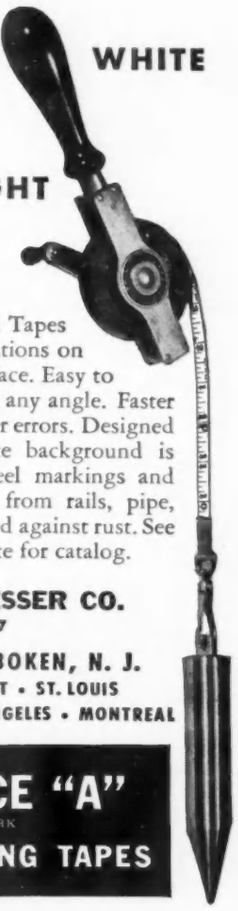

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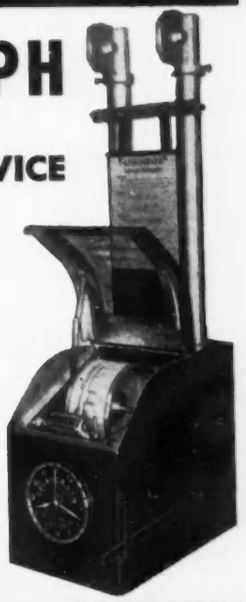

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If in studying the tables in the February 11th Yearbook-Forecast number of The OIL WEEKLY you compared editorial forecast with what actually happened in 1945, you found the editors were close to perfect in estimating the completions of new wells during the year.

A year ago these editors predicted that 25,262 new wells would be drilled. The actual number was 25,354, making a near bull's-eye of 99.81%.

For 1946 The OIL WEEKLY editors forecast 24,241 new wells to be drilled, an estimate subject to revision if strikes continue and if the price of oil goes up.

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☆East Texas Border

Strike in Harrison County Has 50-Barrel Daily Flow

Harrison County strike has estimated 50-barrel flow; prospective pool opener new Waskom tests 2 million cubic feet of gas.

Harrison County: R. W. Williams' Furhh Estate 1, Francis O'Neil Survey, 3 miles northeast of Elysian Fields, was reported making improved oil show, with operator preparing to install separator, causing belief that a dual completion might be attempted. The oil show was reported in the Travis Peak from 6294-6308 feet. Gas was found at 3 lower formations. **Placid Oil Company's** Knox 1, Parker Survey, outpost 1 mile southwest of production in the Whelan gas field at Harleton, was washing at 8300 feet. Another gas show was obtained in the Rodessa at 6914-44 feet. Try for dual completion is expected. The discovery well is estimated good for 50 barrels daily. Rogers Lacy's Newman 1, a mile southeast edge test, which was credited with showing salt water at 6791-6825 feet in the Rodessa, was reported setting pipe with hole bottomed at around 8400 feet and apparently with shows in the Travis Peak of Pettit.

Midstate Oil Corporation's J. M. Bryson 1, W. B. Anderson Survey, wildcat 2 miles south of Waskom, is drilling below 3905 feet.

Bert Fields et al's prospective wildcat pool opener 4½ miles south of Waskom in the L. Womack Survey, perforated at 6044-53 feet and tested an estimated 2 million cubic feet of gas per day. The Pettit was later perforated and reported spraying salt water. Total depth is 6305 feet.

Shelby County: Humble Oil & Refining Company's Pickering Lumber Company 1, Francois Survey, was preparing to cut liner, stuck at 8505 feet. Operators had drilled to 12,221 feet and plugged back for test of Travis Peak, where gas possibilities were detected, when liner stuck.

Marion County: Magnolia Petroleum Company's Orr 1, Fowler Survey, southeast of Avinger, was drilling at 9103 feet in sand with streaks of shale, with no new showings.

☆South Central Texas

New Wildcats Projected for Edwards, Atascosa Counties

Two new wildcats located in Edwards County; Quintana to start work on test in newly opened production in Atascosa County; Carrizo Park has new wildcat.

Edwards County: Meco Production Company has located J. W. Holman 1, a 1500-foot wildcat project 1815 feet from the east line and 330 feet from the south line of Sect. 25 in the CCSD& RGNG Survey, Abstract 824, and 25 miles from Sonora on the Sutton-Edwards County line.

Ray E. Pool has taken over Dan Auld's Joe Sid Peterson 1, wildcat location made last year 20 miles north of Rock Springs in SW N Sect 44, M&E RR Survey. It is scheduled for 5500 feet to the Ordovician, with surface casing to be set at 700 feet.

Atascosa County: Quintana Petroleum Company et al started moving materials to C. Muil 2, new test in a recently opened gas-condensate producing area, 4000 feet from the northwest line and 3420 feet from the southwest line of the J. C. Mattison Survey 467, Abstract 606 on a 1589-acre lease. It will be 1320 feet southwest of the Muil 1 discovery well for the area which flowed 100 barrels of 48-gravity condensate and 3½ million cubic feet of gas per day through a ¼-inch choke from perforations in the upper Edwards lime at 8836-9105 feet. The new test is scheduled for 10,000 feet.

Dimmitt County: Humble Oil & Refining Company has begun work on its 3200-foot wildcat test at Carrizo Park about 2 miles south of Carrizo Springs. Location is 3300 feet from the north line and 1320 feet from the west line in the Trinidad Sanches Survey on a 483.5-acre tract.

Bexar County: Ernest J. Biskamp's State of Texas 1 is a new wildcat to be drilled 1 mile south of San Antonio.

☆Southwest Texas

La Reforma New Pay Sand Receives Potential Gauge

La Reforma new pay sand gets potential test; County Line discovery well makes good potential test.

Starr County: Baldridge & King's A. Guerra Estate 1, new pay discovery in the La Reforma field, made a potential gauge of 146.36 barrels of 42-gravity oil daily with no water on ⅛-inch choke from perforations at 6145-48 feet. Tubing pressure was 940 pounds and casing pressure 1020 pounds, with a gas-oil ratio of 612/1. Total depth is 6150 feet with the top of the pay sand at 6113 feet.

Arkansas Fuel Oil Company's Martinez 16, North Rincon field, was completed for an estimated 60 barrels per day on a 5/32-inch choke from perforations at 5658-70 feet with a working pressure of 400 pounds. Total depth is 6003 feet.

Jim Hogg County: Humble Oil & Refining Company has staked a 10,000-foot wildcat in the southeast corner of the county and northwest of production in the Kelsey field. It will be the Mrs. A. M. Kelsey 23, and is 3300 feet from the east line and 9796 feet from the south line of the San Rafail Del Norte Grant, and 2834 feet west of the Bass 18 dry hole.

McMullen County: J. W. Gorman's Roos Brothers 1, discovery gas well for the County Line field, on a potential test gauged 2,200,000 cubic feet of gas per day from perforations at 1929-34 feet and 1945-50 feet. Shut-in pressure was 630 pounds, while flowing pressure was 430 pounds.

Oklahoma Leases Offered

The Osage Indian Agency will hold a public auction March 6 at the Osage Auditorium, Pawhuska, Okla., for the sale of oil leases on a total of 12,316 acres in Osage County. The auction will start at 1:30 p.m., and will be conducted in the Osage Auditorium under the direction of Agency Superintendent T. B. Hall.

☆Lower Texas Coast

Massive Wilcox Production Likely in Goliad County

New production likely in Massive Wilcox in Goliad County; new wildcat for Brooks County under way; Tuleta area wildcat trying for production in lower Wilcox for new field discovery.

Goliad County: Jay Simmons' Mary Poehler 1, wildcat 6 miles southwest of Weesatche in the Jacob Fifer Survey, logged 12 feet of saturated sand in the Massive Wilcox and set production pipe in the 8348-foot hole preparatory to making initial tests. Previous tests at 8000-10 feet recovered 15 feet of condensate with 360 pounds working pressure.

Brooks County: Humble Oil & Refining Company is building a derrick for W. B. Gardner-State 1, 10,000-foot wildcat in the northeast corner of the county west of the Mariposa field production and 12 miles southast of Falfurrias. Location is on a 598-acre lease in J. F. Dawson Survey 348.

Bee County: Mills Bennett's Berger et al 1, wildcat 2 miles southwest of Tuleta in the Ragley subdivision on the J. M. Uranga Grant, completed a series of squeeze jobs before attempting production tests in the lower of 2 Wilcox sands for a new field discovery. The Luling and Slick sands in the Carrizo showed for gas-condensate, and oil shows were logged at 8600-06 feet and 8745-90 feet in the Wilcox. Total depth is 8890 feet.

Fayette County: K. D. Owen & D. C. Bintliff's E. A. Arnim Estate 1, west flank test at Arnim in the Amam Zumwalt League, 990 feet north of Collins 1, gas blowout, and 1000 feet west of Continental Oil Company's Bilton 2 (nearest producer), recovered 470 feet of oil on a 30-minute drill-stem test made at 2045-65 feet using a ¼-inch choke. Five and one half inch pipe was set on bottom at 2065 feet.

☆Upper Texas Coast

Hackberry Sand Production Opened by McCarthy Wildcat

McCarthy opens production in Hackberry sand; production extended in south flank of Sour Lake field; Midfields area gets new operations; Altair extension test is good producer.

Jefferson County: McCarthy Oil & Gas Corporation's W. C. Tyrell Trust 3, wildcat in the W. C. Dunshie Survey northwest of production in the Winnie field and just across the Chambers County line, brought in commercial production from the Hackberry sand for the first time in the Texas Gulf Coast, when the well gauged 12 barrels of 39.2-gravity oil an hour through a 9/64-inch choke with 950 pounds tubing flow pressure. Production is from perforations at 10,160-170 feet, with total depth 10,789 feet.

Hardin County: Watson L. Caldwell et al's Colby-Watson 1, extending production 2000 feet to the south flank of the Sour Lake field, was completed for 138 barrels of 32.2-gravity pipe line oil daily through ⅛-inch choke from 60 perforations at 3928-43 feet with a gas-oil ratio 415/1 and tubing pressure 675

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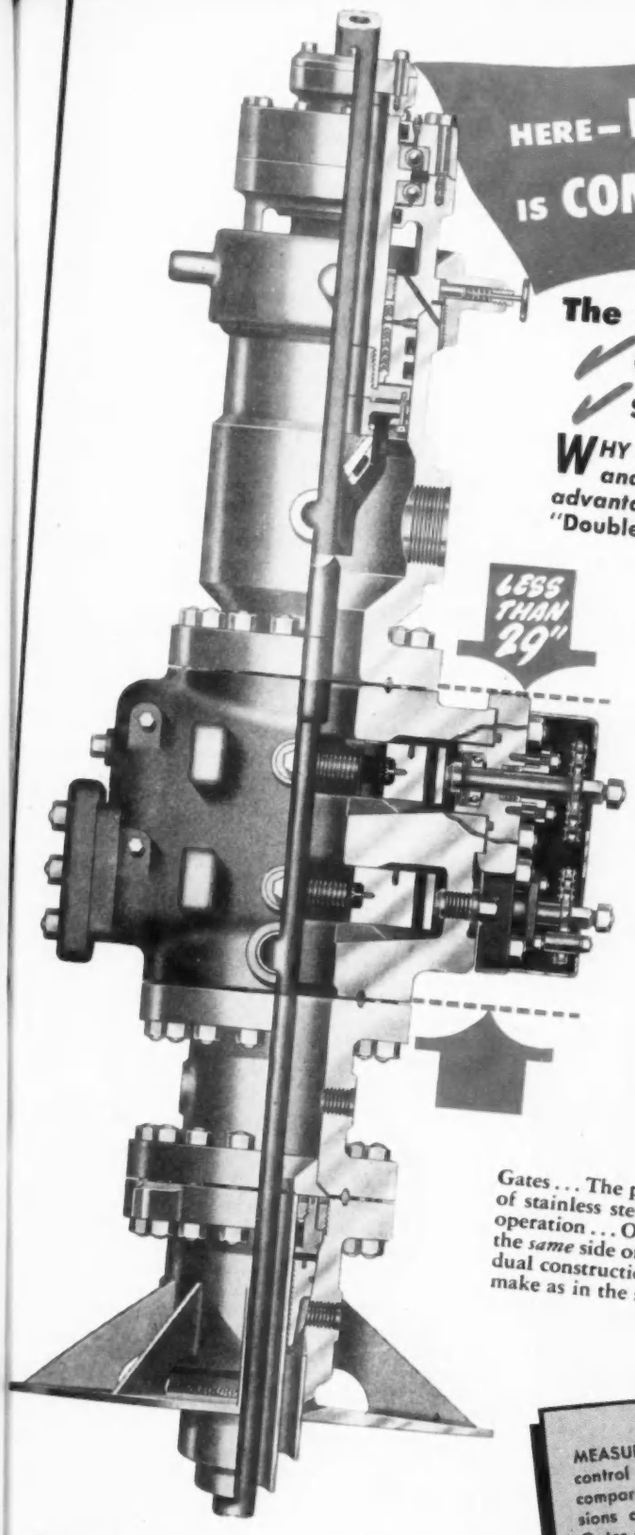

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The Shaffer "Double" Cellar Control Gate

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MEASURE the height dimensions of any other control equipment on the market and then compare them with the overall vertical dimensions of the Shaffer Double Cellar Control Gates shown below. You will readily see why Shaffer Gates make such great savings in your cellar space requirements.

Size in Inches	Height "A" Without Flanges
6⅝"-7"	23"
8⅝"-9"-9⅝"	25⅛"
10¾"-11¾"	27"
12¾"-13⅜"	28½"

You can get Shaffer Double Cellar Control Gates in a complete range of sizes from 6⅝" to 13⅜" inclusive, and they have the same working capacities as other Shaffer Gates. An investment in these gates is one that will last over the life of many, many wells. So why not start saving *now* on future cellar space requirements by adopting Shaffer Double Gates as standard well equipment. Your nearest Shaffer representative will be glad to give you complete details on this equipment—or write direct.

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pounds. Cores from 4128-31 feet indicated a fine grained sand with a gas odor while cores from 3895-3928 feet produced a sandy shale with oil and gas shows. A fine dark sand showing oil and gas saturation was taken at 3928-43 feet. Five and one half inch casing was cemented on bottom at 4138 feet.

Matagorda County: Amerada Petroleum Corporation et al's (Sun Oil Company) Ike Laughlin 1, second wildcat southeast of Blessing and in the southwest corner of Lot 5, John Holmes Survey, east of the recently junked hole in the W. T. Morrison et al lease, is scheduled for 10,500 feet and was drilling below 1050 feet after setting conductor pipe.

Providence Oil Company has located Matilda Adamcik Macha 1, new wildcat in the Midfields discovery area. The test is 4600 feet northeast of the Strnadel 1, discovery well, and in Sect. 1, I&GN Survey, Abstract 212, on a 138-acre lease.

Magnolia Petroleum Company is moving in derrick and materials to begin work shortly on its Live Oak Farms 1, new test about a mile east of the Midfields discovery well on a 190-acre lease in the J. W. E. Wallace Survey.

The Superior Oil Company of California & John H. Blaffer's W. J. Culbertson 1, Sect. 81 of the P. Burnett & A. S. Sojourner Survey, Abstract 13, 5000 feet northeast of the Paterson 1, discovery well for the Sugar Valley field, was completed for 245 barrels of 43.8-gravity oil and 2½ million cubic feet of gas daily through a 12/64-inch choke from perforations at 8274-75 feet with 2540 pounds tubing pressure. Seven-inch casing was cemented at 8516 feet. Sands showing saturation were encountered at 8274-95 feet.

San Jacinto County: Fred M. Manning, Inc.'s Central Coke & Coal Company 1, wildcat 2½ miles southwest of Mercy field in the J. Ferguson Survey, Abstract 119, was last reported making drill-stem tests after drilling to 11,000 feet.

Brazoria County: Magnolia Petroleum Company & Abercrombie Company's H. B. Besey et al 1, extension test in the southeast area of the Old Ocean field and 1896 feet southeast of the Peter Studer et al 1 which extended production in the area, drilled the cement plug in the 7-inch casing set at 11,011 feet, and perforated for a production test.

Colorado County: Superior's Mrs. Myra S. Pryor 2-A, southwest extension at Altair, was completed for 535 barrels of high gravity oil and 2,050,000 cubic of gas through a ¼-inch choke with 2200 pounds of tubing pressure. Production flows from 96 perforations at 8242-52feet with 2½-inch tubing swung at 8208 feet. Total depth is 8475 feet and has 7-inch pipe set on bottom.

AIMME Elects

Officers for the East Texas Chapter of the American Institute of Mining and Metallurgical Engineers, Petroleum Division, elected at a recent meeting include: Riley A. Aucoin, assistant division engineer, Humble Oil & Refining Company, Tyler, Tex., chairman; Walter H. Spears, Union Producing Company, Shreveport, La., vice chairman; Don M. Kerr, Kerr Engineering & Construction Company, Kilgore, Tex., secretary-treasurer.

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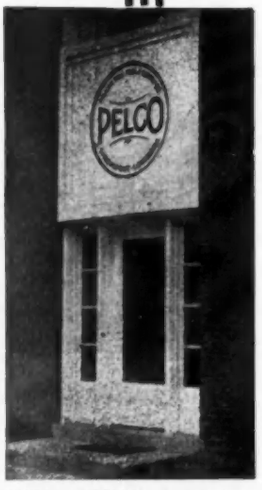

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☆South Louisiana

Production Is Opened in Oberlin Area, Allen Parish

Humble opens production in Oberlin area; new pay sand tapped in Egan field, Hahnville discovery gets confirmation test; good producer completed in old Caillou Island field.

Allen Parish: Humble Oil & Refining Company completed Mrs. J. A. Bel Estate 1-B, 33-5s-5w, discovery well for the Oberlin area, after more than 6 months of operations. The well gauged 74.32 barrels of 47.5-gravity oil and 2,688,000 cubic feet of gas daily through a 9/64-inch choke from 30 perforations at 12,658-62 feet. Tubing pressure was 630 pounds with a gas-oil ratio of 5584/1. Total depth is 13,150 feet with 5½-inch casing set a foot off bottom.

Acadia Parish: Sun Oil Company-Sohio Petroleum Company's Hayes 1-A, 38-9s-1w, Egan field, has definitely opened a new pay sand. Initial potential test gauged 135 barrels of 48.8-gravity pipe line oil on an 18-hour test through a 12/64-inch choke with 3200 pounds tubing pressure. Perforations in the new sand section were made at 9897-9908 feet.

Iberville Parish: Humble Oil & Refining Company's Baist Cooperage Lumber Company, Inc., 1, wildcat test in the Bayou Sorrell area, 92-12s-13e, blew mud out of the hole when a sand was encountered at 10,960 feet and caught fire. The well burned for a short time before operators choked off the hole, and the well was last reported mudded in. This test is scheduled for 12,000 feet.

St. Charles Parish: Union Oil Company of California is moving materials to drill Milliken & Farwell 2, 26-12s-20e, a confirmation test to the recent Hahnville idscovery well. The new location is southeast of the No. 1 well which was never completed satisfactorily, and is now shut in after gauging 3½ barrels of oil hourly through an ⅛-inch choke from perforations at 8772-85 feet. The new test is contracted for 10,000 feet.

Jefferson Davis Parish: Sohio Petroleum Company's Claudius Fontenot et al 1-B, west offset to the No. 1 well in 15-10s-6w, confirmation test in the recently discovered Bon Air area, was reported drilling below 300 feet after setting 16-inch conductor pipe at 97 feet.

Terrebonne Parish: The Texas Company's State-Caillou Island 79 on State lease 188, 23s-20e, 900 feet northwest of No. 77 well in the old Caillou Island field, was completed for 976 barrels daily through a ¼-inch choke from 96 perforations at 11,754-86 feet, which is the deepest production for the field. Total depth is 11,874 feet.

Shell Oil Company's River & Rails Terminals 10, 7-12s-8e, was completed for 318 barrels of 36.8-gravity oil daily through a 9/64-inch choke from perforations at 8327-42 feet with 1350 pounds tubing pressure and a gas-oil ratio of 528/1.

J. Pickens Coleman Heads North Texas Oil, Gas Group

J. Pickens Coleman, Wichita Falls operator, has been elected president of the North Texas Oil & Gas Association, succeeding Ed. G. Kadane. E. B. Clark

of Wichita Falls was chosen vice president, while Fred Schmann, also of Wichita Falls, was retained as executive vice president.

The board of directors was re-elected with the following additions: W. V. Coffey, Bowie; Henry Craig, Olney; T. Leo Moore, Electra; Boyd Street, Graham; George L. Shanor, Vernon; and Ralph T. Zook, Bradford, Pa. These officers will take over at the annual banquet meeting March 2 at Wichita Falls.

Ashland Field, Bienville Parish, Has Two Failures

Two tests fail in Ashland field.

Bienville Parish: J. B. Blanchard abondoned I. A. Tilley 1, SE SW 36-14n-8w, Ashland field, after testing dry at 3400 feet, and also abandoned M. S. Sexton 1, SW SE 36-14n-8w, same field, after testing no show at 3394 feet. Same operator set 10¾-inch surface pipe at 200 feet in W. E. L. Foster 1, 35-14n-8w, awaiting orders. These 3 wells are to the north of the Natchitoches Parish discovery, M. L. Halbouty et al's C. L. Detro 1, NW SE 1-13n-8w.

R. T. Carraway's E. E. Howell 1, 31-14n-7w, wildcat, Ashland field was abandoned at 3508 feet, no show.

Natchitoches Parish: J. B. Blanchard's A. C. Foster Heirs 1, SW NE 2-13n-8w, was conditioning at 1446 feet, after a blowout at 1442 feet.

Developments indicate that if a field is to be completed around the Halbouty discovery, trend would be to the southwest, failures having been reported to the northeast in Bienville Parish.

Bossier Parish: Barnsdall Oil Company-Sohio Petroleum Company-Continental Oil Company's Crystal 1, SE SW 28-21n-11w, Ivan area, was drilling at 7293 feet. Barnsdall Petroleum Company-Sohio Petroleum Company's wildcat, Carter-Burton 1, NW NW 26-23n-13w, Benton area, was drilling at 8388 feet.

Richland Parish: Magnolia Petroleum Company completed Lee Tillman 1, SW SE 25-17n-8e, in Delhi field, and established the record for thickest sand section encountered so far in this prolific field. Operators logged 113 feet of solid sand, carrying oil saturation all the way, from 3197-3310 feet. The well was perforated from 3300-08 feet and is flowing 252 barrels of 41.6-gravity oil daily through 3/16-inch choke. Bottom of hole is 3382 feet. Previously the record for thickest sand section was held by Jones & Linam's Crawford 1, ¼ mile north and ½ mile east of the Magnolia well.

Caddo Parish: H. C. Owens' Skidmore 1, wildcat in NE SE 1-16n-11w, squeezed at 5348 feet, perforated at 5323-30 feet and recovered salt water.

Union Producing Company's wildcat, Noel Estate A-1, 11-9n-16w, Mooringsport area, was drilling in lime and streaks of shale at 8983 feet near bottom of hole, and plans to plug back and complete as an oil producer in the Pettit.

Sabine Parish: T. L. James & Company's Brown 1, NE SW 6-9n-12w, wildcat, was abandoned at 6215 feet. Union Producing Company's wildcat at Louisiana Long Leaf Lumber Company 1, SW SW 29-8n-11w, scheduled to go below 10,500 feet, is drilling below 1847 feet. The L & L Company's State Pelican Bank and Burr 1, SE NW 25-10n-13w, is drilling below 1110 feet on a 2500-foot test.

☆ Arkansas

Ouachita County's Wesson Field Has Travis Peak Strike

Wesson field, Ouachita County, has first Travis Peak producer.

Ouachita County: McAlester Fuel Oil Company's C. M. Wesson B-2, NE SE NW 24-15-19, Wesson field, perforated casing at 3486-3500 feet with 24 shots, and flowed 175 barrels of 38-gravity oil daily through 12/64-inch choke, tubing pressure 350 pounds, gas-oil ratio 500/1. It was the sixth producer for the new Glen Rose Wesson field, and reported 400 feet lower than any other well in the field. Travis Peak was topped at 3270 feet. R. H. Crow's P. C. Grayson C-5, NW SE NW, 19-15-19, is waiting on standard rig, casing set at 3450 feet in Travis Peak.

Columbia County: McAlester Fuel Oil Company's Z. P. Duncan A-1, C SE NW 10-17-19, ran electrical log preparatory for open hole connection and washed in between 7404-06 feet. Skelly's Myrtis Pipe Unit 1, E SW C 26-19-20, was coring between 5645-60 feet. It was delayed by a fishing job after drilling to 5529 feet. R. H. Crow's Taylor B-3, NW SE NE 12-15-20, is waiting on standard rig. Casing is being set at 3992 feet.

Prairie County. M. W. Martin et al's W. H. Stewart 1, 3-3n-5w, 2 miles northwest of DeValls Bluff's Gates 1, abandoned at 2215 feet in the Paleozoic, was spudded and is now drilling surface hole. The new shallow test will seek Nacatoch sand production at about 2000 feet.

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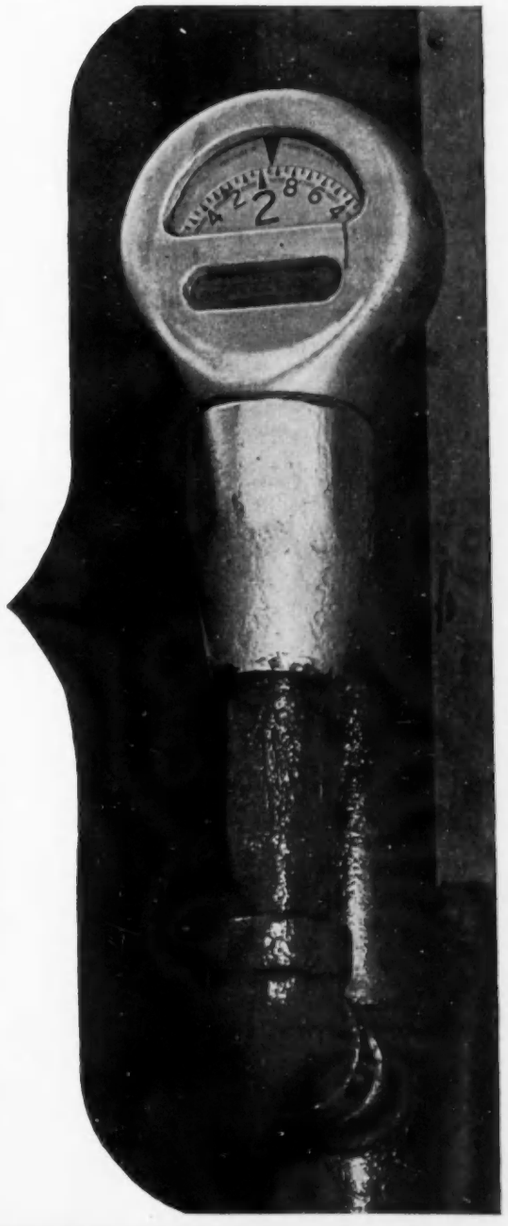

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☆ Mississippi

Chickasaw County Prospect Sets Casing for More Tests

Chickasaw County prospect setting casing for further tests; Tinsley well completed in new productive horizon; Gwinville extension prepares to test Massive sand.

Chickasaw County: A. W. Hutchings' W. C. Stone, Jr., 1, SE SW 29-12s-5e, shallow test, has run casing to 2420 feet in preparation for further tests of shows. The Stone is being drilled up in the northeastern part of the state and is getting its shows from the Cypress sandstone in the 2400-foot level.

Yazoo County: C. F. Urschel's Slick Estate 25, SEc 35-11n-3w, Tinsley field, has been completed to establish a new productive zone for the area. The well was drilled to 7516 feet and then plugged back to the Tuscaloosa where casing was perforated at 5896-5905 feet. Heavy salt water input was encountered on first drill-stem tests but it was eliminated and on the initial production test the well flowed 146 barrels of 36-gravity oil in 12 hours through ¼-inch tubing choke. Good oil shows were also reported in sand section at 6428-40 feet.

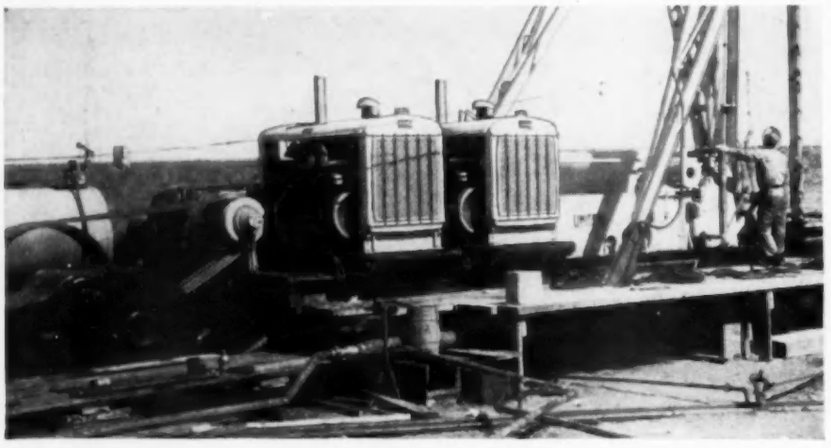
Jeff Davis County: Gulf Refining Company's Vinnie Walker 1, NWc NE SW 34-9n-19w, Gwinville field, which will extend its productive limits about a mile southwest if successfully completed, is bottomed temporarily at 9352 feet in the Commanchean horizon while preparations are being made to run casing through the gas zone at the 8100-foot level. Good shows of gas were reported at that level, but the well headed on through to test the Massive for oil at 9254 feet. No shows, however, have been reported from the lower horizons where sand and shale were recovered in cores.

Adams County: Phillips Petroleum Company's Davey 1, 46-8n-2w, prospective pool opener, is reported to have tested good shows of gas at the 10,000-foot level, although considerable difficulty with salt water is said to be experienced. No official reports have been issued on the exact situation here, but the indications seem to be that if the drillers can eliminate salt water input they have a good chance of making a commercial producer. Roeser & Pendleton-Sohio Petroleum Company's Baker-Maier 1, 34-6n-2w, wildcat on the verge of completion, is continuing efforts to eliminate salt water which, so far, is running very heavy in production tests.

Marion County: Humble Oil & Refining Company's E. A. Ball 2, SW SE 20-2n-14e, has been completed to make 5 producers for the Hub field. The well was drilled to 9200 feet and perforated opposite the Marine Tuscaloosa at 8069-73 feet. In its initial production test it flowed at the rate of 1,200,000 cubic feet of gas and 65 barrels of 62.5-gravity condensate a dry through 3/16-inch tubing choke. Gas-oil ratio as 18,500/1. Humble is also rigging up for its E. A. Ball 3, NWc 20-2n-14e, offset to the completed gasser.

Jasper County: Tide Water Associated Oil Company-Gulf's Simmons-Morrison Unit 1, NEc NW SW 30-1n-13e, East Heidelberg field, appears to have assured commercial production and is continuing production tests. Casing was perforated opopsite the Eutaw sands at 4872-89 and 4937-54 feet and recovered 2440 feet of oil and 360 feet of mud. Subsequently, it pumped 11 barrels of oil per day.

Lincoln County: Sun Oil Company's Case Heirs 1, SW SE 8-7n-7e, Brookhaven field, has squeezed perforations in the Basal Tuscaloosa section in preparation for further tests at the 10,254-foot level. Previously, 44 inches of saturated oil sand had been cored at 10,279-84 feet and the well is indicating a fair commercial producer.



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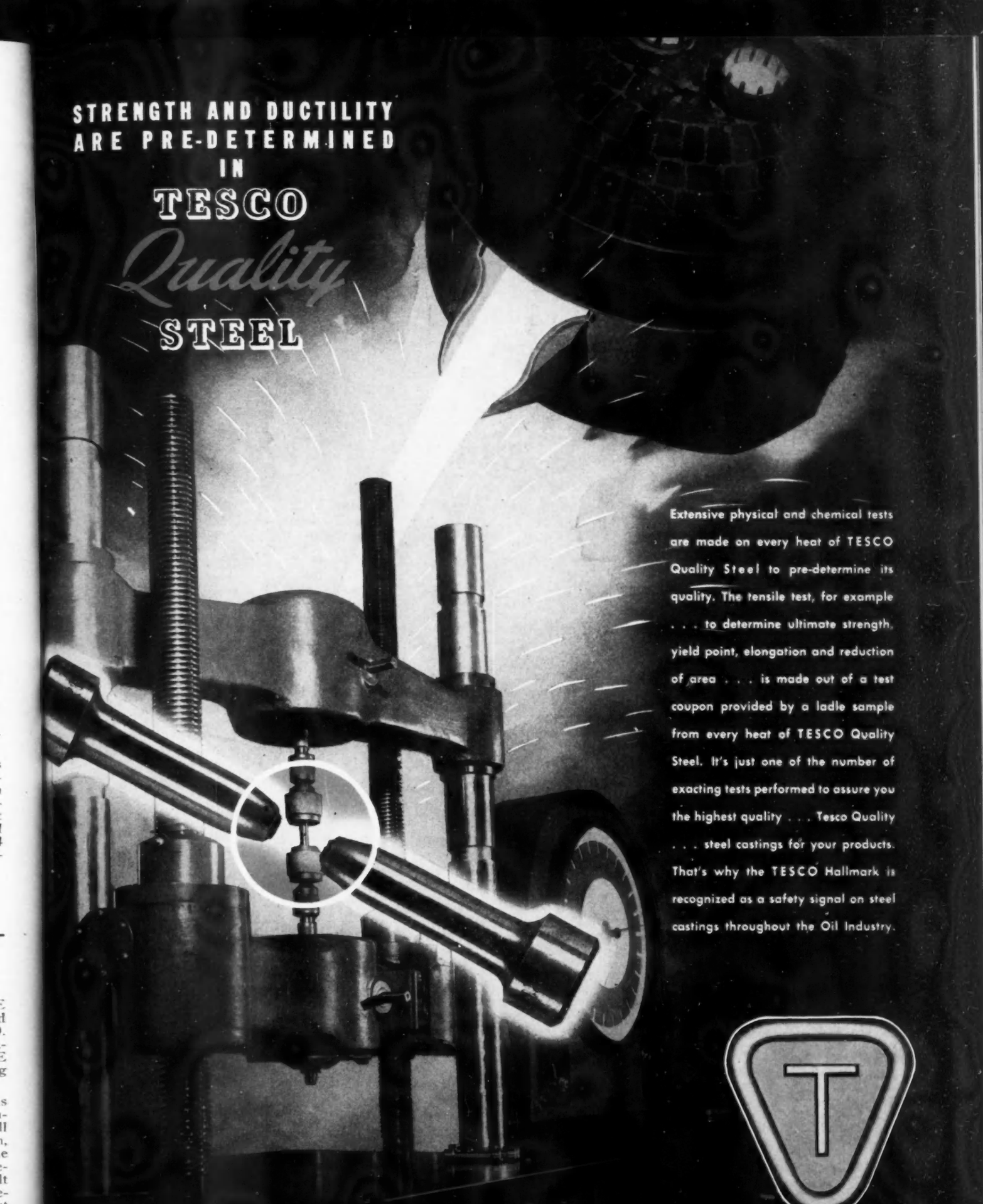
☆ Alabama

Walker County Tests Delayed By Operational Difficulties

J. H. Deason's DeBardelaben 1, SE NW 6-14s-5w,, Walker County, is tied up at a total depth of 1480 feet; Glen D. Rose Oil & Gas Company's First National Bank of Birmingham 2, NW SE 30-12s-7w, is proceeding with a fishing job at a total depth of 1637 feet.

Winston County: Glen D. Rose is moving in material for his First National Bank 3, SWc SE 7-12s-8w, which will head for the lower horizons. In March, 1945, Rose completed Bozhell 1 in the same area as a gasser, but it was reported later to have loaded up with salt water and died. Oil shows were also reported in the 1500-2000 foot level but they held no promise of commercial production.



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☆ California

Richfield's Bandini Wildcat Has Prolific Flow on Test

Richfield's Bandini area wildcat flows 800-1000 barrels on formation test; Buena Park well on pump for 140 barrels from 12,000 feet; Standard to thoroughly explore La Habra district.

Los Angeles County: Richfield Oil Corporation's wildcat, Vail 1, Bandini area 16-2s-12w, flowed at the rate of 800 to 1000 barrels of clean 33-gravity oil on a formation test of interval 7900 feet to bottom at 7952. Well is 2100 feet south of the company's Union Pacific Unit 1 and the interval tested is behind the pipe and above the interval now being tested in the Union Pacific well. Richfield is preparing to set casing in the Vail well, success of which indicates the presence of major oil field in this area. Richfield has aver 3000 acres under lease. Other operators are Shell and Chanslor-Canfield Midway Oil Company.

Richfield Oil Corporation has placed on production for an indefinite period its wildcat, Union Pacific Unit 1 in the Bandini area of East Los Angeles. Latest gauge showed production of 175 barrels of 32-gravity oil and approximately 700 barrels of water through a 24/64-inch choke with 652 pounds flow pressure from 8570-90 feet. Efforts to solve the water problem are continuing.

In the same area Chanslor-Canfield Midway Oil Company was coring at 9115 feet in Bandini 1, 21-2s-12w. Richfield's Vail 1 in Sect. 16 was coring at 7952 feet.

Standard Oil Company of California's deep test of the Lefingwell area near La Habra, Lewis Community 1 in 11-3s-11w, has been placed on pump and is producing 65 barrels of 34-gravity oil from a plugged depth of 6815 feet. Total depth is 12,184 feet. Standard is making a thorough test of this general area with 3 additional projects. Operator is rigging up to deepen Behnke Community 1 in 14-3s-11w, has just spudded Stern Community 2-1 in 7-3s-10w, and has staked Gerrard Community 1 in 11-3s-10w.

Shell Oil Company has run 1862 feet of 5½-inch liner to bottom at 10,419 feet in Dominguez Estate 1 off the east end of the Dominguez field, with perforations at intervals from 8599 feet to bottom. Tubing will be run and the well tested for production. Sands are tight.

The Ohio Oil Company is well under way with its second test of the Gardena area, just outside Los Angeles on the south. Gardena Community Four 1 in 23-3s-14w is drilling below 1200 feet. Operator obtained excellent showings on a previous test drilled last year in this area, but could not eliminate serious water intrusion.

Orange County: Best results to date were obtained last week in tests of General Petroleum's deep wildcat in the Buena Park area. Librown 1 in 21-3s-11w is flowing at the rate of 140 barrels of 28-gravity oil, with mud and water cut of about 10 percent. Total depth is 12,600 feet. Flow pressure is 135 pounds.

Ventura County: A joint test of The Superior Oil Company and British-American Oil Producing Company to extend the Del Valle field westward has apparently met with success. Black 1 in 13-4n-18w came in flowing 54 barrels of 21.5-gravity oil in 6 hours through a 20/64-inch choke, then died. Pumping unit is being installed.

Kern County: Tide Water Associated Oil Company's deep test of the Kern River field, Luck 154 in 30-28s-28e, has been abandoned after drilling to 5998 feet in Eocene sand. The well had showings which may result in a second well being drilled.

Independent Exploration Company's Oceanic 2 in the Cymric field, which flowed 4000 barrels of 37-gravity oil on completion, is now producing through a 12/64-inch choke at a 350-barrel rate. Standard of California's Weston 33, another big Cymric completion, has been beaned back to 600 barrels through a 15/64-inch choke. Well made 3000 to 4000 barrels initially. It extends Oceanic sand production about ½ mile southeasterly. On the other side of the ledger Honolulu Oil Corporation abandoned Midway-Premier 22-48 at 6640 feet after logging no showings of importance. Well is in 22-29s-21e. Standard of California's Weston 71-27w in Sect. 27 is scheduled for early completion. Well flowed 1500 barrels on recent test.

☆ Rocky Mountain Area

Blizzards Halt Activity; Rangely Greatly Extended

Wintry blizzards halt drilling activity; Rangely field extensions watched closely.

Colorado

Renewed wintry weather brought most drilling operations to a standstill last week in the Rocky Mountain region.

A northwest extension of Rangely field by completion of Continental Oil Company's Rooth 1, NW SW 15-2n-103w, is adding thousands of acres to the proven territory. The productive area was extended south of the White River some time ago by the Newton Oil Company-Wasatch Refining Company's Gentry 1. Farther south, in territory yet to be proved, is the Cobb-Stringer-Newton Gov't. 1-D, SE SE 4-1n-102w, now drilling below 4208 feet after a prolonged fishing job. Newton's Govt. 12-D, still farther in virgin territory at SW NE 10-1n-102w, was down to 1850 feet with cable tools and awaiting rotary rig for a Weber test. In still another direction, at the north-central edge of Rangely field, Algard Oil Company's Allen 1 topped the Weber sandstone 5 feet lower than Continental's Rooth 1 found it, and 7-inch pipe has been set in the Weber with expectation of another successful completion. This well, ½ mile north of production, is at SE NE 18-2n-102w. Locations have been announced for Weber tests at NE SE 33-2n-101, 3 miles east of the town of Rangely Field on the highway, and at the opposite end of the field in SE SE 25-3n-104w on the road from the field to Wiley's Resort and Artesia. Stanolind Oil & Gas Company which already is probing the southern limits of the field with its McLaughlin 1 at NE NE 5-1n-102w, now below 4000 feet, has spudded another nearby at SE SW 34-2n-102w. Wasatch-Idaho-Sharples' McLaughlin 3-33, NE SE 33-2n-102w, is drilling below 2844 feet after coring.

☆ Illinois Basin

Coles County, Illinois, Test Has Good Gas Flow

Significant wildcat in Coles County, Illinois, has good gas flow; new play in Mattoon area indicated; White County pool opener in sight; new area being opened in Henderson County, Kentucky.

Illinois

A development program for the Mattoon pool may hinge on the outcome of National Consumers' Herkimer 3, SE NW NE 11-12n-7e, Coles County, a Devonian lime test in the northern part of the field.

After plug was drilled and while the well was cleaning out with several hundred feet of debris in the hole, the well began making a good gas flow.

A new play in the Mattoon area was indicated when Vincent J. Nolan, head of the Erie Pipe Line Company, leased 1800 acres nearly 10 miles north of Mattoon field production with intention of starting drilling operations within the next 2 weeks. The acreage is in Sects. 22, 23 and 24-14n-7e and is regarded as a trend play based on subsurface geology.

George and Wrather's Tivnen 1, NW SW SW 26-13n-7e, northeast of pool production, probably will be abandoned after a third squeeze job. When the plug was drilled after the squeeze operators had 800 feet of water in the hole while swabbing to test Rosiclare sand.

White County: Sun Oil Company has a pool opener in sight at Okerson 1, NW SW NE 9-7s-8e, a mile from production in the Roland pool. Casing is set at total depth of 3114 feet with test of Aux Vases at 2940 feet and McClosky at 3020 and 3100 feet slated through perforations.

Christian County: John Wrather was drilling plug at Thompson 1, SE SE SE 15-15n-2w, for a production test of Devonian lime at 1971-77 feet.

Kentucky

Basin Drilling Company is opening a new area at Washburn 1, 6-P-23, Henderson County, 2 miles west of the Henderson pool. Casing was set to 2638 feet and tests of Aux Vases sand at 2490 feet and McClosky lime at 2550 feet wil be made through perforations. Total depth is 2703 feet.

☆ Michigan

Tuscola County Test Yields 20-30 Barrels After Acid

Significant Tuscola County test yields 20 to 30 barrels daily after acid treatment; Lake County prospect shows oil on test.

Tuscola County: Fred Riddell's Clark 1, NE SE NW 33-10n-7e, wildcat 6 miles southeast of the old Birch Run (Berea sand 1500-foot) pool, averaged from 20 to 30 barrels of oil per day following acid treatment at 2551-54 feet. Production is from the Dundee, topped at 2461 feet. The well is producing an estimated 1 million cubic feet of gas from oil horizon.

While comparatively small in initial

production the Tuscola wildcat is considered significant because it was located by seismograph (location is on a farmout from Shell, which made a seismograph survey in the district 2 years ago), and because of Dundee horizon production. Only a few isolated tests in the "Thumb area" of Michigan have produced in the Dundee section.

Lake County: MacCallum and Craft's State 1, NW NE SW 27-17n-12w, Yates Township, wildcat 9 miles southwest of the Reed City pool, showed 200 feet oil and 100 feet water on a 6-hour test in the Monroe at 3405-14 feet. Operators may plug back and acidize.

Isabella County: Chartiers Oil Company's Diehl 1, N½ SW NW 29-15n-6w, wildcat 1 mile northwest of the old Sherman pool, averaged between 15 and 18 barrels oil while producing gas at the rate of 2 million cubic feet per day from the Traverse limestone at 3280-93 feet. Later deepened to 3310 feet, the test showed some water. Company was undecided whether to plug back and produce or deepen to the original Dundee objective, about 3800 feet.

☆ Canada

Alberta Exploration Program Is Begun by Anglo Canadian

Anglo Canadian Oil Company, Ltd., has begun geological, geophysical work and drilling on more than 1 million acres of leases and reservations in Alberta. The program will be supervised by Stanley E. Slipper, Calgary consulting geologist.

Holdings so far announced as involved in the program total 929,000 acres. Another 120,000 acres may be added to this total shortly. So far listed are 483,000 acres in the Notikewin River Area, on the Northwestern Alberta Plains 40 miles north of Peace River town (Twps. 90 to 95 Rges. 21 to 23w5); 178,000 acres in the Wabamun Lake Area on the Central Western Plains starting 30 miles west of Edmonton City (Twps 50 to 52 Rges. 3 to 6w5); 188,000 acres in the West Viking Area on the Central Plains between Camrose and Viking (Twps. 45 to 49 Rges. 15 to 17w4); and 80,000 acres in the Elk Point Area on the East Central Plains 25 miles north of Vermilion (Twps. 55 to 57 Rges. 4 to 6w4).

Anglo Canadian, whose managing director is Grant Spratt, commenced operations in Turner Valley in 1937. Its production from this field has totalled more than 6.5 million barrels, worth more than $9 million, with current output over 1000 barrels daily. The company is currently participating with several majors and independents in the key Brazeau wildcat in the Central Alberta Foothills, and is a partner with Imperial Oil in the current deep Crossfield wildcat, in the Alberta Syncline.

Home-Brazeau Syndicate 1, lsd 5 17-43-17w5, key wildcat on the Brazeau Anticline in the Central Alberta Foothills, has confirmed an 'East Side Madison Limestone Block' at 11,351 feet, 6876 feet subsea, and is now drilling below 11,430 feet. This well first topped the Madison at 9498 feet, 5023 feet subsea, set 7-inch casing at 9523 feet, and faulted back into Fernie at 9597 feet. Slight porosity in the Madison sliver indicated from 500 to 1000 Mcf of gas.

The structural picture indicated by the Brazeau test is, in many respects, comparable to that along the east side of North Turner Valley, where a limestone block of as yet undetermined width lies around 1000 feet below the east edge of the main limestone block. In Turner Valley, both main ridge and east side block are productive. The gas in the upper lime at Brazeau offers a good prospect in this section west of the present test. Prospects of the lower lime section will be determined by the bit in the near future. Standard Oil Company of California has started its first 1946 wildcat in Alberta. The test, Burdett-Province 4, is in lsd 16 13-7-13w4. Objective is an oil-bearing Ellis (Jurassic) sand pinchout down the flank of a Madison lime high — the type of structure which yielded the Conrad oil field, 18 miles west and south of the new venture.

Imperial Oil has started a deep wildcat in Southern Saskatchewan, it is Imperial-Davidson 2, lsd 13 10-27-2w3, 4½ miles west of the recently abandoned Imperial-Davidson 1. Site is 9 miles west and 2 miles north of the railway point of Davidson. It is planned to test all formations down to the Pre-Cambrian, with total depth likely to be between 7000 and 8000 feet. The Davidson 1, completed at 5200 feet, failed to show any oil or gas horizons with commercial possibilities.

Imperial Oil has been successful in another step-out test in its gas exploration program on the Central Alberta Plains. Imperial-Kinsella 5, lsd 7 11-48-9w4, has completed in the Viking Sand (Upper Cretaceous) at 1940 feet, with open flow potential of 8148 Mcf of gas daily. The venture is 3 miles east and 2 miles south of the nearest producer, recently completed Imperial-Kinsella 2.

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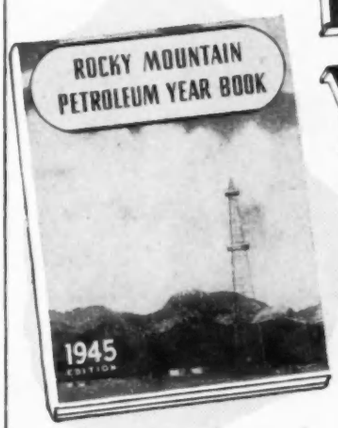

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ARKANSAS WILDCATS

Arkansas County—Failure: C. E. Osborne's Stuttgart-Price 1, c ne sw 16-2s-3w, abnd 2540 ft.

Union County—Failure: Arrow Drlg. Co.'s Union Saw Mill A-1, c sw sw ne 8-18s-12w, oil sd 2330-24 ft, bailed 1 bbl, abnd 2364 ft.

ILLINOIS WILDCATS

Clinton County—Failure: H. J. Schlafley's Merten 1, sw nw nw 33-2n-1w, abnd 1656 ft.

Cole County—Failure: Hageman & Ponds' Cramer 1, se se se 35-13n-7e, abnd 2026 ft.

Hamilton County — Failure: Dale Hopkins' Schearman 1, ne sw sw 2-6s-7e, abnd 3482 ft.

Jasper County—Failure: John Washburn et al's Baker 2, nw se 30-6n-10e, abnd 2966 ft.

Jefferson County — Failure: E. S. Adkins' Green 1, nw sw sw 8-3s-1e, abnd 2370 ft.

INDIANA WILDCATS

Gibson County—Oil Discovery: Deep Vein Coal Co.'s Smith Hrs. 2, sw se ne 1-2s-12w, pumped 98 bbls, Mc'l 2302-16, td 2316 ft.

Posey County — Failure: F. H. Rhodes' Schmitz 1, nw sw se 33-5s-12w, abnd 2780 ft.

Washington County—Failure: E. Leonard's Fee 1, ne ne ne 15-1n-2e, abnd 308 ft.

KANSAS WILDCATS

Cowley County—Failure: D. S. Hager's Hunt 1, se se sw 4-31s-5e, Layton sd 2363, Arbuckle 3567, abnd 3584 ft.

Morris County — Failure: W. E. Harding's Kimd 1, sw sw ne 18-16s-5e, Miss lime 2253-61 ft, abnd 2278 ft.

Ness County—Failure: Aladdin Pet. Corp.'s Gano 1, se cor 20-19s-26w, Viola 3950 ft, Arbuckle 5082 ft, abnd 5144 ft.

Russell County—Failure: Bridgeport's Kaufman 1 "B," ne nw 19-15s-12w, Lans 3023 ft, Arbuckle 3319 ft, abnd 3349 ft.

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KENTUCKY WILDCATS

Hancock County — Failure: Heldt et al's Brown 1, 300 ft wl 4000 ft sl 6-P-33, abnd 1020 ft.

Muhlenberg County — Failures: Hachbush's DePoister 1, 3170 ft sl 2105 ft wl 17-J-29, abnd 2170 ft.

B. Hackbush's Yunkers-Eads 1, 1200 ft wl 3620 ft nl 6-J-29, abnd 2348 ft.

Union County—Failures: Delta Drilling Co.'s Drury 1, 3490 ft nl 195 ft wl 20-P-20, abnd 2680 ft.

Harry Ames' Girten 1, 2050 ft el 1500 ft sl 16-P-20, abnd 2544 ft.

SOUTH LOUISIANA WILDCATS

Assumption Parish—Failure: Danciger-Wm. Helis' Norman-Breaux Lbr. Co. 1, start nec sw¼ sect 46 th s 1650 th w 657 to lcn in 46-12s-13e, sw flk Napoleonville, 1 mi s 6900-ft prod, abnd 9382 ft.

Beauregard Parish—Oil Discoveries: Magnolia's Lutcher-Moore Lbr. Co. 2-C, 1980 n 660 w of sec 22-5s-11w, 4 mi e Pinegrove fld, Pay 7638 ft, Vicks 5855 ft, base Moody 7040 ft, Wilcox 905 ft, flow 130 bbls 46.1-gr, 7/64-in, gor 830/1, td 11,625 ft.

Magnolia's M. J. Witzki 1, 660 n&w of c of 22-6s-11w, 2 mi n of Oretto fld, pay 8422-40 ft, Vicks 6503 ft, base Moody 7675 ft, perf 24 shots 8423-26 ft, flow 90 bbls 45.1-gr, 7/64-in, tp 1500 lbs, td 8969 ft.

Cameron Parish—Failure: Humble's Miami Corp. 1-J, start nec sect 17 go 3316.9 wly alg nl th sly 640.2 to lcn in 17-13s-7w, e of Sweet Lke fld, abnd in sw 10,192 ft.

NORTH LOUISIANA WILDCATS

Franklin Parish—Failure: Big Chief Drlg.'s Co.'s J. T. Ingram 1, c se se se 4-13n-6e, gas rock 3915 ft, Tuscaloosa 4945 ft, abnd 5680 ft.

Richland Parish—Failure: R. T. Sellars' Dan B. McKay 1, c sw sw se 11-16n-7e, Midway 2245 ft, Clayton 2730 ft, Tuscaloosa 2746 ft, abnd 3398 ft.

MICHIGAN WILDCATS

Gratiot County — Failure: Ray C. Andre's Seaman 1, nw nw ne 29-11n-4w, abnd 1042 ft.

Lapeer County — Failure: Guy E. Dodge's Woodward 1, sw nw ne 8-8n-9e, abnd 2370 ft.

Newaygo County—Failure: M. B. Belden's Fawcett 1, ne ne ne 33-16n-14w, Dundee 2653 ft, abnd 2859 ft.

Van Buren County—Failure: C. W. Collin's Hughes 1-A, sw sw ne 22-4s-13w, abnd 1210 ft.

OKLAHOMA WILDCATS

Canadian County — Failure: Fox & Fox's Simpson 1, se se sw 9-14n-5w, Bartlesville sd 7082 ft, abnd 8366 ft.

Garvin County—Failure: Tide Water's Prince 1, sw se sw 31-1n-2w, abnd 2700 ft.

Logan County—Failure: L. A. Johnson et al's Brickett 1, se se 26-19n-2w, Miss 5093 ft, abnd 5528 ft.

Okfuskee County—Failure: Amerada's Berryhill 1, sw se ne 17-10n-10e, Hunton 3760 ft, abnd 3901 ft.

WEST TEXAS WILDCATS

Andrews County—Failure: Magnolia's Martin 2, c sw sw PSL 12, blk A-47, elev 3290 ft, Yates 2880 ft, San Andres 4440 ft, Glorietta 5700 ft, Clear Fork 6120 ft, base Permian 8470 ft, Pennsylvanian 8470 ft, Mississippi 8760 ft, Woodford shale 9025 ft, Devonian 9245 ft, abnd in Silurian water 10,414 ft.

Crockett County—Failures: T. W. Loffland, Jr., et al's Paul Perner 1, 890 ft wel 660 ft nsl T. C. Ry Co. 43, blk S-T, elev 2495 ft, San Andres 1345 ft, abnd 1429 ft.

Magnolia's Shannon 1-A, c ne se GC&SF Ry. 24, blk Q, elev 2575 ft, anhydrite 790 ft, salt 800 ft, Yates 1245 ft, Grayburg 2025 ft, San Andres 2152 ft, abnd 2625 ft.

Ector County — Oil Discovery: The Texas Co.'s T. P. Land Trust 1-D, c sw nw T&P Ry. 27, blk 45, T-1-S, mile southeast of TXL-Ellenburger production and 1207 ft lower structurally with fault dividing reservoirs, elev 3263 ft, anhydrite 1490 ft, Yates 2810 ft, Glorietta 5250 ft, Devonian 8509 ft, Silurian 9230 ft Fusselman 9570 ft, Montoya 9650 ft, Simpson 9810 ft, Ellenburger 10,740 ft, flowed 1697 bbls 419-gr gor, .531/1, cp 1150-630 lbs and tp 805-380 lbs, natural via ½-in from perf 10,790-10,890 ft, td 10,975 ft.

Lubbock County—Failure: Kerlyn-McGee Oil Interests et al's Fetter 1, c nw nw C. & M. Ry. 17, blk C-B, elev 3321 ft, anhydrite 1803 ft, brown lime 3820 ft, San Andres 3860 ft, abnd 6500 ft.

Menard County—Failure: Phillips Pet. Co.'s Dan Crowell 2, 330 ft snl 600 ft wel P. M. Welchold sur A-810, trace gas 2202-47 ft, abnd 2350 ft.

Pecos County—Failure: Helmerich&Payne's Barnes 1-A, 330 ft out north corner H&GN Ry. 140, blk 10, elev 2460 ft, abnd 975 ft.

WEST TEXAS NEW PAY TESTS

Garza County—Hitt (PHD) Field Deep Pay Failure: Honolulu & Devonian Oil Co.'s Altman 1, 740 ft out sec sect 1255, T. T. Ry. Co. sur offset to 3500-foot producer, elev 2967 ft, anhydrite 1310 ft, Strawn 8515 ft, Ellenburger 9170 ft, granite 9593 ft, abnd 9604 ft.

Upton County—McCamey Fld Deep Failure: Gulf's Starnes 1-D, 660 ft wel 3300 ft nsl sect 1, J. Prater sur A-351, elev 2566 ft, base Permian 6220 ft, Mississippi shale 6710 ft, Devonian 6840 ft, abnd 7933 ft.

Howard County — Howard-Glasscock Field Deep Oil Discovery: Continental and Group One Oil Corp.'s Settles 1-D-133, se nw nw W&NW Ry. 133, blk 29, elev 2696 ft, worked over deep failure, Yates 1370 ft, lime 2010 ft, Pennsylvanian 8924 ft, Ellenburger 9904 ft, pumped 31 bbls 40.6-gr oil and 2 bbls water, acidized 15,000 gals Pennsylvanian perf 8910-9080 ft, td 10,122 ft, pb 9130 ft.

WEST CENTRAL TEXAS WILDCATS

Shackelford County—Failure: Eltex, Ltd.'s Merrick Davis 1-A, 2310 ft nsl 565 ft wel T&P Ry. 30, blk 12, twin to 5218-ft jkd test, elev 1878 ft, Bend 4513 ft, Caddo lime 4543-4843 ft, Marble Falls 4943 ft, Barnett shale 4961 ft, Ellenburger 5004 ft, Cambrian (Hickory) 5602 ft, abnd 5808 ft.

Stephens County—Failure: Panhandle Ref. Co.'s Repass 1, 467 ft out swc sect 1066, TE&L Co. sur, elev 1090 ft, abnd in Ellenburger 4506 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: D. H. Bolin et al's Berend 1, 150 ft nsl and 1200 ft wel sect 35, blk 4, Clark-Plumb sur, abnd 1144 ft.

McMahon-Kelleher & McMahon's Turbeville 1, 150 ft wel 2370 ft nsl blk 124, J. W. Harris (Frazier & Clark) sur, abnd 1516 ft.

Cooke County—Failures: W. H. Hammon-Hanlon & Buchanan's Hudspeth 1, 761 ft ewl 150 ft nsl of Marshall University sur A-633, abnd 1870 ft.

B. B. Orr et al's Fette 1, 330 ft ewl 308 ft nsl of 196-ac tract, D. H. Campbell sur A-196, abnd 1680 ft.

King County—Failure: Superior Oil Co.'s Pitchfork L&C Co. 1, nw nw nw sect 171, J. H. Gibson sur, elev 2017 ft, granite 7142 ft, abnd 7145 ft.

Young County—Failure: Farmer & Hansen's Jeffery-Texaco 1, 150 ft snl 450 ft ewl of south 20 ac of west 80 ac of TE&L Co. 43, abnd 780 ft.

NORTH TEXAS NEW PAY TEST

Throckmorton County—Kelley Field Deep Pay Failure: Grisham-Hunter Corp.'s R. W. Kelley 12-D, 1150 ft snl 1600 ft wel nw¼ sect 2, Brooks & Burleson sur A-1381, offset 800-ft pumpers, elev 1323 ft, Bend 4225 ft, Mississippi 4687 ft, abnd 4709 ft.

EAST TEXAS WILDCATS

Cherokee County—Failure: Clark & Cowden Drlg. Corp.'s Decker 1, 330 ft out swc 160-ac tract and C. G. Woods sur, elev 409 ft, Pecan chalk 4093 ft, Austin 4980-5180 ft, Woodbine series 5180 ft, abnd in shale 5400 ft.

Kaufman County—Failure: Bobby Manziel et al's Williamson 1, 95 ft from ne and nw lines of blk 36, Kemp townsite, or 3500 ft ewl and 2500 ft nsl J. S. Ables sur, elev 376 ft, Woodbine series 2978 ft, abnd 3014 ft.

Smith County—Failure: Phillips Pet. Co.'s Englander 1, 518 ft wel and 669 ft snl of 32½-ac tract, or 1980 ft snl and 2450 ft ewl sect 1, Don T. Quevado League, deepest in district, elev 569 ft, massive anhydrite 9349 to 9575 ft, Travis Peak 10,365 ft, abnd in Cotton Valley (estimate) at 13,781 ft.

Wood County — Failure: Magnolia's McCreight 1, 660 ft from m/s/sw and 2450 ft from m/s/s lines of E. Esparza sur, lot 7, elev 423 ft, (OWDD) from 6665 ft, Georgetown 5167 ft, Goodland 6248 ft, Paluxy 6307 ft, Glen Rose 6650 ft, massive anhydrite 7703-7886 ft, Pittsburg 8497 ft, Travis Peak 8602 ft, abnd 9000 ft.

EAST TEXAS DEEP PAY TEST

Smith County—Chapel Hill Field Deep Failure: Sinclair Prairie's Shofner 1, 2350 ft snl and 660 ft ewl Wm. Dickerson sur A-301, elev 468 ft, Georgetown 4428 ft, Paluxy 5540 ft, Glen Rose 5800 ft, Massive anhydrite 7055-7304 ft, Rodessa 7260 to 7490 ft, Pettit 7925 ft, Travis Peak 8075 ft, Cotton Valley 10,650 (est) ft, small yield high-pressure gas zone entered near 13,360 ft, jkd 13,577 ft, pb 8079 ft, flowed 157 bbls 60.2-gr distillate and 5,518,000 gas natural via ½-in from Pettit perf 7963-80 and 8010-58 ft.

SOUTH CENTRAL TEXAS WILDCAT

Bexar County—Failure: Mellie and Milton Pegg-W. H. Bode's E. A. Lowe A-1, 350 fr sl 390 fr el 20-29-ac lse, sso, abnd 1002 ft.

SOUTHWEST TEXAS OUTPOST

Duval County—Rancho Solo Failure: D. C. Creed's W. R. Peters 1, 460 fr wl 990 fr sl SA&MG sur 1, ½ mi ne fld prod, abnd 2727 ft.

LOWER TEXAS COAST WILDCATS

Calhoun County—Failure: Fred Browning's T. P. Traylor 1, E. Ferguson sur on n bnk Guadalupe River, 670 fr nwl 464 fr nel 1000-ac lse, abnd 6519 ft.

Jim Wells County—Failure: Bridwell Oil

For rugged, efficient power...with plenty in reserve to handle peak loads, make sure your drilling rigs are equipped with dependable

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When the going is really rough — the speed, power and *flexibility* of dependable Le Roi Drilling Engines will get you "bottomed" in record time. See your nearby Le Roi distributor for complete details of features that make Le Roi "tops" in performance and economy.

Sizes available from 4 to 400 H.P. utilizing gasoline, natural gas or butane.

P-59

Le Roi Company
1706 S. 68th Street • Milwaukee 14, Wis.
Branch and warehouse: Tulsa, Oklahoma
Branch office: Birmingham, Alabama

Co.'s Ramon Garcia 1-A, 330 s of nl 330 w of el 40-ac lse, LaTrinidad Gr, 3½ mi sw Ben Bolt, abnd 5933 ft.

LOWER TEXAS COAST NEW PAY TEST

Hidalgo County — Los Indios Discovery: Baldridge & King's W. L. Goldston 2, 3107 fr el 5750 fr sl 7358-ac lse, Santa Anita Gr, 5100 s sw Well 1 on same lse, Pay 6030 ft, perf 144 shots 6030-58 ft, flow 2.9 mln gas, 75 bbls cond, ¼-in, 13.3 mln gas open, tp 2200 lbs, td 8449 ft.

UPPER TEXAS COAST WILDCATS

Chambers County—Failure: Glenn H. McCarthy's E. A. Wilborn et al 1, 694 fr nl 3555 fr wl 254.44-ac tr, Andrew Weaver sur, abnd 7948 ft.

Hardin County—Failure: L. M. Josey et al's Caswell Tr. 1, 1090 fr el 2600 fr wl 915 fr n&sl 148-ac tr, BBB&C sur sect 72, 3000 fr nearest prod, abnd 6727 ft.

Harris County—Failure: Jack W. Frazier's R. E. Brooks Est. 1, 660 ne at ra fr Greens Bayou 350 fr nwl of 65-ac tr out of 1200-ac lse, abnd 6514 ft.

Matagorda County — Oil Discovery: Sun's Strnadel 2, 1320 fr s&el 325-ac lse, I&GN sur 7, 933 nw Strnadel 1, sd sg 9065 ft, pay 9127 ft, perf 8 shots 9134-36 ft, flow 229.06 bbls 42.5-gr oil, 0.1% wtr, ½-in, gor 1314/1, tp 2000 lbs, td 9477 ft.

Wharton County—Failures: H. W. Snowden's J. B. Putman 1, 330 fr s&el 170.25-ac tr, WCRR sur, ne¼ sect 43, N. Louise gas area, ½ mi n Continental's Swanson 1 gasser, abnd 5510 ft.

Martin Thompson's J. J. Wigginton 1, 660 fr n&el 80-ac tr, c ne¼ se¼ E.&H. Bolton sur, abnd 5504 ft.

UPPER TEXAS COAST NEW PAY TEST

Newton County—Sabine Tram Oil Discovery: Humble's E. C. Hankamer et al 2, 113.1 fr nl 660 fr wl Shearley Goodwin sur, 2640 s se of disc well, 6160-ac out of 42,210-ac lse, pay 7997 ft, perf 13 shots 8001-04 ft, flow 141.3 bbls 38.4-gr oil, 14% wtr, ⅛-in, gor 685/1, tp 950 lbs, td 8908 ft.

UPPER TEXAS COAST OUTPOST

Ft. Bend County—N. Thompson Extension: T. S. Loffland's Annie E. Williams et al 1, 330 n of Brazos River 335 e of el 20-ac lse on ne flk, 2100 n of prod, pay 7928 ft, perf 15 shots 7954-59 ft, flow 113 bbls 36.1-gr oil, .002% wtr, ⅛-in, gor 454/1, tp 790 lbs, td 8154 ft.

WILDCAT STARTS

ALABAMA

Winston County: Glenn D. Rose First Nat'l Bank 3, swc se 7-12s-8w, mim.

ARKANSAS

Prairie County: M. W. Martin et al's W. H. Stewart 1, 3-3n-5w, dr 55 ft.

ILLINOIS

Effingham County: A. J. Hammer's Kuhring 1, sw sw ne 11-6n-7e, lcn.

Hamilton County: Sohio's McMahon 1, sw sw se 12-6s-7e, lcn.

Richland County: H. C. Hageman et al's Coen 1, se ne 28-3n-11w, lcn.

Pure's Eberhardt 1-A, s½ sw ne 32-3n-10e, lcn.

KANSAS

Butler County: O. J. Connell et al's Eckel 1, se se ne 1-26s-5e, mim.

Greenwood County: Tom Woodman et al's Nelson 1, ne nw se 8-26s-13e, mim.

Rooks County: Republic Natural's Cooper 1, se se se 14-7s-20w, lcn.

Sedgwick County: Beech Aircraft's Hinkle 2, se ne ne 1-27s-1e, mim.

Stafford County: R. H. Shields' Sheppard 1, sw se 16-22s-11w, lcn.

SOUTH LOUISIANA

E. Baton Rouge Parish: Sugarfield Oil Co.'s Jones Est. 1, n 16° 07 mins e 2736 fr swc 44-6s-1e, ru 7200-ft test.

St. Charles Parish: Union of Calif.'s Milliken & Farwell 2, begin nec 72-12s-19e go e 7375.9 th n 3028.06 to lcn in 26-12s-20e, se of disc well, Hahnville area, 10,000-ft test.

NORTH LOUISIANA

Richland Parish: Big Chief Drlg. Co.'s G. B. Franklin 1, 7-17n-9e, 4500-ft test.

MICHIGAN

Allegan County: Michigan Devonian Petroleum Co.'s Bartz 1, sw se nw 6-4n-12w, lcn.

Leonard C. Sleep's Remink 1, sw sw ne 7-3n-14w, lcn.

Arenac County: Frank Roush's Brintnell 1, ne se sw 16-14n-6e, lcn.

Gratiot County: C. W. Teater's Paprstein 1, nw ne se 31-9n-1w, rig.

Kent County: Jones Dev. Co.'s WeDilde 1, sw sw sw 28-9n-11w, lcn.

Missaukee County: Union Drlg. Co.'s Weidler 1, nw nw se 34-22n-7w, lcn.

Saginaw County: Rowmor Corp.'s Boerk 1, nw se nw 3-11n-2e, dr.

MISSISSIPPI

Warren County: Magnolia's Ruth Pidgeon B-1, swc se se 27-17n-4e, dr 700 ft.

NEW MEXICO

Roosevelt County: W. J. Peterman et al's Taylor 2, 1781 ft nsl and 1320 ft ewl of 22-2s-30e, 1600-ft Permian test, top Santa Rosa sd 607 ft, dr 1120 ft.

OKLAHOMA

Carter County: J. D. Lewis et al's Rose 1, nw sw nw 4-5s-2w, dr 1970 ft.

Comanche County: Hambree & Rau's Rau 1, ne nw se 2-1s-11w, lcn.

Cotton County: T. H. McCasland's Hill 1, se ne ne 4-3s-12w, dr 300 ft.

Jackson County: Texas Co.'s Hickman 1, sw nw nw 6-1n-19w, rur.

Okfuskee County: Johnson Gill's Scott 1, sw sw se 34-10n-10e, lcn.

Seminole County: Globe O&R Co.'s Norvell 1, ne sw nw 20-7n-7e, rig.

Stephens County: Lundy & Shears' Massie 1, ne ne nw 31-1s-5w, rur.

Woodward County: Sinclair Prairie's Smith 1, sw sw se 12-23n-22w, lcn.

WEST TEXAS

Crockett County: T. W. Loffland and J. M. Loffland, Jr.'s L. B. Cox 1, 330 ft snl and 660 ft ewl se¼ I&GN Ry. 21, blk 2, lcn 1500-ft cable test.

T. W. Loffland and J. M. Loffland, Jr.'s V. B. Cox 1-27, se se sw I&GN Ry. Co. 27, blk 2, lcn 1500-ft cable test.

Ector County: The Texas Co.'s T. P. Land Trust-Fraser 1-F, c nw sw T&P Ry. 39, blk 45, T-1-N, 2¼ mi n of TXL-Ellenburger field, mim for Ellenburger test.

WEST CENTRAL TEXAS

Callahan County: Norman D. Fitzgerald et al's J. R. Kennard 1, se sw sw S. P. Ry. Co. 8, A-1641, lcn 2000-ft cable test.

W. T. Gayler and J. C. Leitz's A. Newman 1, 150 ft snl and 1265 ft ewl se¼ BBB&C Ry. 128, lcn 1500-ft cable test.

Coleman County: H. T. Owen and Rhodes Drlg. Co.'s J. D. Gorman 1, 1401 ft nsl and 467 ft ewl of nw¼ T&NO Ry. 31, blk 2, lcn 4000-ft rotary test.

Fulweiler & Hughes Drlg. Co.'s T. Temple-al's J. R. Kennard 1, ne sw sw S. P. Ry. Co. 8, blk 1, mile nw Silver Valley, lcn 3600-ft rotary test.

Jones County: Daresco Oil Well Service's Bert Fields 1, ne se ne T&P Ry. 48, blk 15, lcn 2500-ft test.

Shackelford County: Hedrick Oil Co.'s Dawson-Conway 1, nw ne nw E. T. Ry. Co. 195, lcn 1700-ft cable test.

NORTH TEXAS

Archer County: Bridwell Oil Co.'s L. F. Wilson 1-J, 1626 ft nsl and 150 ft ewl S. P. Ry. 1, A-412, 2000-ft test, dr 1430 ft.

E. B. Clark et al's W. M. McGregor est. 1, 467 ft out nec w½ se¼ sect 7, H. H. Duff sur A-732, rur for 5650-ft Ellenburger test.

C. C. Winfrey et al's L. F. Wilson 1, 848 ft snl and 150 ft wel sect 120, ATNCL sur, lcn 650-ft cable test.

Clay County: Panhandle Ref. Co.'s Lorine Segler 1, 330 ft out sec lot 16, W. A. Farris sur A-146, 1½ mi nw Heard pool, 7000-ft Ellenburger test, dr 260 ft.

Jack County: Hanlon & Buchanan's H. P. Briley 1-A, 1167 ft out nwc B. C. Finley sur A-222, lcn 1000-ft test.

Hanlon & Buchanan's W. M. Crowley 1-E, 1087 ft snl and 233 ft wel S. P. Ry. 1, A-579, lcn 1000-ft test.

Hanlon & Buchanan's Mrs. M. L. Knox 1, 539 ft snl and 1167 ft wel se¼ S. P. Ry. 1, A-579, lcn 1000-ft test.

Hanlon & Buchanan's Mrs. M. L. Knox 2, 233 ft snl and 539 ft ewl sw¼ S. P. Ry. 2, A-2202, lcn 1000-ft test.

EAST TEXAS BORDER COUNTIES

Marion County: M.A.Freeman's L. Stevenson 1, 690 s of nl 466 w of el J. Perry sur, 2 mi nw Jefferson, dr 6545 ft.

SOUTH CENTRAL TEXAS

Caldwell County: O. W. Killam's Minnie Marshall 1, 650 fr swl 168 fr sel 160.5-ac lse, J. Burleson sur, 2000-ft test.

Clyde Lane's A. W. Jolley 1, 330 fr ne&nwl 86-ac tr 2260 fr nwl 330 fr swl J. B. Gray sur, ru.

Milam County: Andre & Foster's E. Dornhoefer 1, 1500 fr nly nl 800 fr wl 386-ac lse, S. C. Robertson sur, lcn.

W. F. Glenn's J. S. Jacob 3, on 50-ac lse,

This rugged field service unit, comprising a winch powered by a Model AHH 9 hp. 4-cycle, single cylinder Wisconsin Air-Cooled Engine, fitted with Greenfield clutch reduction assembly, is used in raising heavy telephone poles, lifting logs, etc., in southern Oklahoma. Adapted to a great variety of hoisting jobs . . . such as handling pipe, loading and unloading equipment and any other heavy lifting requiring heavy-duty power. Supplied by Harley Sales Co., Tulsa, Oklahoma.

Wisconsin Air-Cooled Engines are first choice among operators who place a premium on ready-to-go, hard slugging dependability and all-weather serviceability.

WISCONSIN MOTOR Corporation
MILWAUKEE 14, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

WRITE TO HARLEY SALES CO.
510 Atlas Building, Tulsa, Oklahoma
M & M Building, Houston, Texas
Oil field distributors for Wisconsin Engines and all types of utility units.

2½ mi e of Minerva, 5 mi e ne Minerva-Rockdale fld, 1200-ft test.

Williamson County: H. G. Albert's E. W. Stromberg 1, 2652 fr nl 729 fr wl 188-ac lse, P. Coursey sur, set surf csg 36 ft.

SOUTHWEST TEXAS

Starr County: Sun's L. M. Green 1, 4000 fr s&wl Sta. Teresa Gr and 1146.7-ac lse, 2 mi ne Sun fld, 10,000-ft test.

Zapata County: M. L. Massingill's Serapio Vela Est. 1, 6834 sw alg line between Porc 27 & 28 fr nec Porc 28 th 1722 nw at ra to lcn 467 fr nw&nel 180-ac tr, 3500-ft test.

LOWER TEXAS COAST

Live Oak County: Producers Corp. of Nevada's B. V. Matheson 1, 467 fr ne&nwl 106.7-ac lse, in sect 272, ne Mt. Lucas fld, W. Freeman sur, mi.

Nueces County: Stanolind's J. T. Gillette 3-A, 2070 fr sl 1697 fr wl blk 7 and 430.4-ac lse, Cantillo Colony Ditch Co. sur, dr 3798 ft on 8350-ft test.

Victoria County: Sterling O&R Co.'s J. J. Welder 2, 1460 fr nwl 1820 fr nel S. A. Belding sur, 11,371.89-ac lse, dr 1340 ft on 7000-ft test.

UPPER TEXAS COAST

Chambers County: McCarthy O&G Corp.'s E. A. Wilborn et al 2, 3000 sw of nearest prod s flk Markham fld, in Hankamer area, 330 fr n&el 252.54-ac tr, Andrew Weaver sur, 3650 e and n of dry hole 1, 9000-ft test.

Liberty County: Ohio Oil Co.'s B. E. Quinn 2-A, 5208 ne Kirby 1 5975 se of Dry Hole A-1, 1980 fr s&el 1071-ac lse, Daniel Donahoe Lge, 10,300-ft test.

Matagorda County: Amerada et al's Ike Laughlin 1, 660 fr wl 330 fr n&sl 39.54-ac lse, and lot 5, John Holmes sur, 10,500-ft test.

Government Subsidy Given To Five Additional Fields

New ceiling prices for crude oil from five fields were announced by OPA effective February 9 on oil produced beginning January 1.

In the Capitan field, California, the OPA set a schedule of prices at the receiving tank ranging from 95 cents per barrel for 14-14.9° gravity to $1.38 per barrel for crude over 39°.

In Texas fields, a top of $1.25 per barrel, with a two cent per degree differential down to 83 cents for below 20°, was set for the Monahans-Ellenburger pool, Ward County; the Wheeler-Ellenburger pool, Winkler County; the TXL-Ellenburger pool, Ector County, and the Bedford-Ellenburger pool, Andrews County.

The OPA order added a new provision to Section 14(a) of Revised Maximum Price Regulation No. 436, that where the price in any contract for the sale of wet gas is computed, in whole or in part, as a percentage of the price received for the sale of residue gas, the producer's maximum price for wet gas under such contract shall be computed "on the basis of such percentage of the maximum price for the sale of residue gas in the area as determined by the provisions of this regulation."

Maryland Maps Offered

Magnetic maps of Worcester County and part of Wicomico County, Maryland, have been issued as Preliminary Map 46 of the Oil and Gas Investigation series, and show areas that may contain geologic structures favorable for the accumulation of oil and gas. Copies may be purchased for 30 cents each from the Director, Geological Survey, Washington, D. C.

Price Schedule Set

Sinclair Wyoming Oil Company, subsidiary of Sinclair Prairie Oil Company, initiated a new price schedule for Tensleep formation oil in Bailey Dome field, Wyoming. Prices were set at 70 cents a barrel for below 20-gravity oil, and ranging upwards 2 cents a degree to 40 and above at $1.12 a barrel.

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

CLASSIFIED ADS. . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

■ Standard drilling outfit, complete, A-1 condition. New Young 145 hp motor, new 5000-ft. wire lines. $8500. L. A. Bolte, R. #2, Bunswick, Ohio, Phone W. Richfield 2423.

■ FOR SALE: 55 Heavy Duty Wichita Falls Spudder, Center spool, new style reverse, chain driven sand reel, chain driven casing drum, high and low speed; Mast 52', 5 x 14, with catapillar motor #60, combination carburetor, all in good condition, priced to sell. W. W. Holmes, Box 567, Amarillo, Texas.

FOR SALE:

1—Power pump—5 x 10 Gardner Oil Bath c/w Waukesha—6 cyl. Type SRK 85 H.P. Motor—steel skids...	$1,850.00
1—Power Pump — 4 x 6 Fairbanks-Morse Oil Bath c/w Allis-Chalmers —4 cyl. Type E—52 H.P. Motor—steel skids	1,050.00
1—Motor—Le Roi—4 cyl. Model 471..	450.00
1—Crown Block—Emsco—RB—36"—5 sheave—Type EA-57 c/w catline sheave	750.00
1—Swivel—Ideal—6"—Type AA.....	700.00
1—Rotary — Emsco — RB — 25½" — Type DA	1,000.00
1—Pulley—66"—PD—12F—Grooved (new)	150.00
1—1.5 K.W.—Kohler Light Plant	350.00

(All items completely reconditioned & guaranteed)

M. Rosenbloom Pipe & Supply Company
P. O. Box 1328
Shreveport, La.

■ FOR SALE: $1000.00 cash. 6¾ x 12 open end type Union Tool Power Mud pump, Heavy duty gear end, Mission Liner's rods, valves & seats. Call or write: C. T. Alford, 2107 Grant Street, Wichita Falls, Texas.

■ FOR SALE: Pumping units: 2 Oilwell SC-20; 2 Jensen 14; 1 Reed 14; 6000 ft ¾-in sucker rods; Casing pumps, 7-in. and 5½-in.; Spudder attachment to Wilson winch w. cable tools. Seguin, Texas, P. O. Box 926, phone 682.

■ FOR SALE: One WK Waukesha motor; one KW Westinghouse light plant; one tubing hook; one 5" oil well draw works. Jones Well Service, P. O. Box 144, Conroe, Texas. Phone: 544 or 292.

2—80 H.P. Tips Semi-Diesel Engines

2—48 KWKVA Western Electric Generators with air compressor, tank, and switchboard. Price entire lot.....$7500.00

MITCHELL MANUFACTURING CO.
Fort Smith, Arkansas.

FOR SALE

50— 500 Barrels
10— 1,000 Barrels
20— 5,000 Barrels
4—10,000 Barrels

Heavy A.P.I. New closed bolted type steel tanks now located at Ogden, Utah. Can quote reasonable prices in order to move from present premises at once.

JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards, St. Clair County, Ill.

SITUATION WANTED

■ Geologist with 9 years experience in Arkansas, Louisiana, Mississippi, and East Texas desires employment in Southwest Texas, San Antonio district. Work must be of a bona fide geological nature. Address: Box 94, c/o The Oil Weekly, Houston, Texas.

■ Released naval officer—graduate Petroleum Engineer with 5 years oil field experience, desires contact with concern engaged in oil field work. Address: Box 97, c/o The Oil Weekly Houston, Texas.

■ Ex-Naval officer graduate engineer with eight years oilfield engineering and seven years management and administration. Engineer, executive assistant or similar position preferably with Independent. Address: Box 99, c/o The Oil Weekly, Houston, Texas.

HELP WANTED

■ WANTED: Sales Engineer by oilfield engine distributor. Engineering graduate with thorough knowledge of East Texas Oilfield. Address: Box 95, c/o The Oil Weekly, Houston, Texas.

■ WANTED BY MANUFACTURER: Mechanical Engineer or Draftsman familiar with oil field production equipment such as casingheads, Xmas trees, Etc. When replying give experience and references. Permanent position. Address: Box 96, c/o The Oil Weekly, Houston, Texas.

TWO DISTRICT SALESMEN—By manufacturer of production equipment for Texas and Louisiana territories. Factory training, salary, expenses and car allowance. Helpful supervision and opportunity for advancement. Give qualifications and business experience with reply to: Box 98, c/o The Oil Weekly, Houston, Texas.

NOTICES

■ Manufacturers Agent, Gulf Coast area desires one additional account. Address: **Box 88**, c/o The Oil Weekly, Houston, Texas.

LEASES, DRILLING ACREAGE, ETC.

■ Selected 10 yr. merchantable Oil & Gas leases, in advance of the play, along Southern rim of the Anadarko Basin, close to new fields; titles and geology checked, $7.50 to $10.00 A.; L. D. Wise, geologist, 208 Gensman Bldg., Lawton, Okla.

SERVICES

ATTENTION SHALLOW WELL OWNERS

—If your production has gone down to a few barrels per day due to paraffin, wax, sand, shale, or sediment causing plugged liners or screens to fail to give the production they should, and are interested in having your wells serviced by a newly developed and proven system of hydraulic liquid and chemical treatment, on the basis of pay from the increased production, write to **National Well Servicing Corporation, 315 Gravier Street, New Orleans 12, La.** All inquiries will be treated in strict confidence.

Did you know that more men exclusively engaged in the drilling-producing business subscribe to **The Oil Weekly** than to any other paper? If you want to buy or sell good used equipment, a low-cost advertisement in this column will get action for you in a hurry. See rates below.

ADVERTISING RATES

TRADING POST SECTION

Regular classified advertisements for this special section, set in type this size without border, takes flat-rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for the first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, The Oil Weekly
P. O. Box 2608 Houston, Texas

"Best Bet Yet"

CLEAN RODS

New

PARAFFINE REMOVER STYLE SUCKER ROD WIPER

Patterson-Ballagh's Sucker Rod Wipers are made in two styles, the regular Universal Style and the Paraffine Remover Style. These wipers offer effective means of completely stripping the rods of oil and muck, no matter how sticky. Both are completely housed and are practically automatic in operation. Each model is available with either plain head or safety cap style head. Release of these heads is easily accomplished by loosening the hammer nuts, allowing the eye bolts to swing free, permitting instant removal.

The wiping is done by self-aligning reinforced discs of tough, wear-resisting PBX Synthetic Rubber. The discs are made in four sizes for wiping 5/8", 3/4", 7/8" and 1" rods. Bodies are cast steel. There is nothing to wear except the easily replaced PBX Synthetic Rubber Wiper.

The Paraffine Remover Style illustrated above has two side outlets for the discharge of excess paraffine, removed by the special cone-shaped refill that is located just at the junction of the two outlets. Patterson-Ballagh Sucker Rod Wipers are time and money savers and mean cleaner production.

See Composite Catalog

Patterson-Ballagh
SUCKER ROD WIPER
Los Angeles 1 Houston 10 New York 6

SQUEAKS from the BULL WHEEL

This Curious World

A true lover of music is a man who, upon hearing a soprano singing in the bathtub, puts his ear to the keyhole.

An optimistic bull fighter is one who puts mustard on his sword.

A fool and his honey are soon parted.

Women who flirt with butchers are playing for big steaks.

Love-making hasn't changed in 2500 years. Greek girls used to sit and listen all evening to a lyre.

A bore is a person who is here today and here tomorrow.

Nobody loves a flat man.

Some people have a heap more fun in their second childhood than they did in their first.

Have you heard about the drunk who couldn't remember the next morning whether he had cooked his goose—or vice versa?

Adolescence is when a girl's voice changes from "no" to "yes."

Horse sense is what keeps a horse from betting on the human race.

An infatuated gob is nothing more than a she-sick sailor.

Maybe He Looked First

"You are charged with throwing your mother-in-law out of a ten-story window. Guilty or not guilty?"

"Guilty, your honor. I did it without thinking."

"That's no excuse. You might have hit somebody on the head. I fine you $5."

Higher Power

"Rastus, did you attend your lodge meeting last night?"

"Nossuh, Boss. We postponed it."

"Why?"

"Well, de Grand-All-Powerful-Invisible-Most-Supreme-Unconquerable-Potentate done got beat up by his wife."

Lost Weekend Coming Up

"Have you been leading a normal life?"

"Yes, Doctor."

"Then you'll have to give up whiskey and women for a while."

True Love

"Darling," he murmured, "I love you so. Please say you'll be mine. I'm not rich like Percy Brown and I haven't a car like Percy's or a fine house or a well-stocked cellar like Percy's. But darling, I love you, and I cannot live without you."

Two soft arms stole around his neck and two ruby lips whispered in his ear: "I love, you, too, darling—but where is this guy Brown?"

Add Definitions

Honeymoon sandwich: Just lettuce alone.

Honeymoon: salad: Lettuce cutup without dressing.

Sentimental Lady

"I hear your girl wears black garters."

"Yep."

"How come?"

"In memory of those who have passed beyond."

Cause and Effect

"I hear that some explorer has found a tribe of wild women who don't have any tongues."

"That so? Then how can they talk?"

"They can't. That's why they're wild."

Just for the Exercise

"Have you been giving that red rooster any encouragement?" asked the stern mother hen of the pullet.

"Why, no, mother, dear. I've just been egging him on a little."

Modern Mother Goose

Mary had a little lamb,
Its fleece was white as snow;
But everywhere that Mary went
'Twas her calves that stole the show.

Not Teasing, Either

"That strip tease artist had a hot time last night."

"Was she toasted by the customers?"

"Nope, grilled by the police."

One With Whiskers

"Say, what are you staring at me for?"

"Sorry, sir. I didn't mean to be rude, but if it wasn't for the mustache, you'd look exactly like my mother-in-law."

"But I don't have a mustache."

"No, but my mother-in-law does."

No Ducks?

The great magician nervously paced the floor and puffed cigarettes. Finally a door opened and a nurse entered.

"What is it?" cried the magician. "Girl or boy?"

"Neither," she gasped. "Three rabbits and a bowl of goldfish."

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C. C. A. BEELS, manager of the land division of The Carter Oil Company's exploration department, Tulsa, will be transferred to New York where he will be associated with Standard Vacuum Oil Company for a short period before going to The Hague, Holland, as its representative. He will be succeeded at Tulsa by **N. Y. RUTH,** manager of Carter's exploration work in the northwestern division at Billings, Montana.

• • •

R. L. TOLLETT, president of the Cosden Petroleum Corporation, and **C. W. GUTHRIE,** West Texas operator, have organized the Basin Oil Company with $10,000 capital stock. Headquarters have been established at Big Spring, Tex.

• • •

DR. WALTER C. LOWDERMILK, authority on soil and soil conservation, spoke on "Soil Conservation and the Jordan Valley Authority" February 13 at a joint meeting of Member Societies of the Engineer's Council of Houston. **IAN ROSS MacFARLANE,** radio commentator and newsman, spoke on "Palestine—A Modern Industrial Oasis."

• • •

CLYDE WILLIAMSON, San Fransico manager for Hagan Corporation, Pittsburgh combustion and chemical engineers, has been presented with a Certificate of Appreciation from the War Shipping Administration for help given in the cadet-midshipman training program durng the war.

• • •

ROBERT W. CORNELL has been appointed comptroller of the Parker Appliance Company, Cleveland. He succeeds **OLIVER W. BERNDT,** who resigned recently. Cornell has been associated with the company since 1930.

• • •

R. L. BAUMAN and **GABE P. ALLEN,** both of Dallas, and **ROBERT C. LEHMAN** of Detroit, have organized the Bauman Drilling Company with headquarters at Dallas.

• • •

DON HARLAN, petroleum engineer for The Texas Company, was elected president of the Fort Worth Petroleum Engineers Club. **GORDON FISHER,** Gulf Oil Corporation, was named executive vice president, while **MEYER H. DUBROW,** Continental Oil Company, and **DON DAVIS,** Rector Well Equipment Company, Inc., were chosen vice presidents. **J. C. McCARTHY,** Stanolind Oil & Gas Company, will be secretary-treasurer.

• • •

FRANK E. STICKLE has organized the Stickle Drilling Company with offices in the Philtower Building, Tulsa, and a field office in Ellis, Kan. Stickle is president and general manager, and **ROBERT B. PARRIOTT,** who has received his discharge as lieutenant colonel in the Army, is vice president.

• • •

PAUL B. FAHLE has resigned as geologist with The Pure Oil Company in Houston and now is district geologist for Plymouth Oil Company in the Arkansas-Louisiana district with headquarters in El Dorado, Ark.

• • •

VIRGIL SMITH has been appointed engineer for Sunray Oil Corporation in the Seminole district of Oklahoma, with headquarters at Allen. Smith was recently discharged from the Navy as a lieutenant.

• • •

JERRY ATKINSON, district engineer for The Carter Oil Company at Great Bend, Kan., has resigned to manage his father's business in Ardmore, Okla.

• • •

O. P. ADAMS has been appointed director of development, National Tube Company. He has been assistant general superintendent of the Company's National Works, McKeesport, Pa., since September, 1942.

• • •

A. W. AMBROSE, of Bartlesville, Okla., executive vice president of Cities Service Oil Company, has been appointed chairman of the Bartlesville Chamber of Commerce Oil and Gas Committee.

• • •

E. G. DAHLGREN, assistant secretary of the Interstate Oil Compact Commission, addressed the Oklahoma City Geological Society February 13 with a digest of the national stripper well survey, recently completed.

NELSON T. STOVER has been made general sales manager of The Ohio Oil Company, covering both the Eastern and Rocky Mountain sales territories. Stover started his career with the company as a messenger and worked as a stenographer and clerk before he joined the armed forces during World War I. Upon his return, he was transferred to Illinois as a bookkeeper in the production department. In 1919 he returned to the general office at Findlay, O., where he served in the accounting department until 1925. He was appointed cashier of the Lincoln Oil Refining Company, marketing subsidiary, in 1925, and in 1927 was appointed sales manager. In 1935 he was appointed wholesale sales manager of The Ohio Oil Company, which position he has held up to the present.

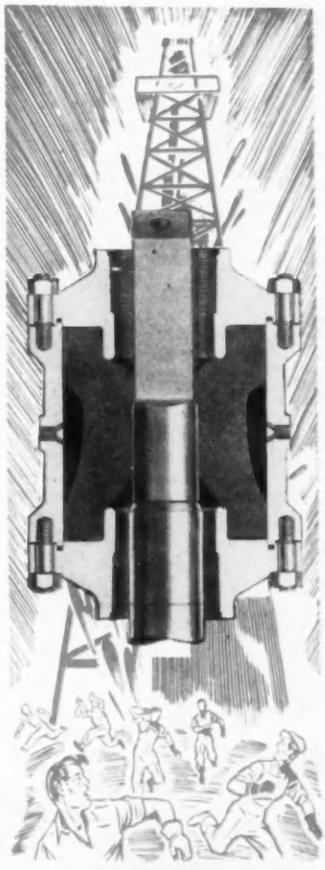
GERALD B. SILER of the geological department of The Carter Oil Company, has been transferred from Seminole, Okla., to Oklahoma City as a field geologist.

• • •

FRANK M. SCHELL has retired as general superintendent of the South Penn Oil Company's northern division after 48 years of service. He began his career in the oil business as a roustabout.

• • •

J. L. MINAHAN, United States Geological Survey, has been transferred from the Tulsa office to Holdenville, Okla., where he will be assistant to district engineer **W. R. CUMMINGS.** Minahan returned recently from service with the Army engineers.



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MEN IN THE INDUSTRY NEWS

J. F. BECHTLE has been appointed Wyatt Metal & Boiler Works representative for the New England states comprising New York, Pennsylvania, Delaware, Maryland and the District of Columbia with headquarters in New York City. Bechtle formerly was employed by the M. W. Kellogg Company, where he spent much time in the metallurgical and research division developing arc welding procedure methods beginning with the development of welding rod coating, designing and installing automatic welding machinery and in development work in the low and higher alloys, as well as solid alloys. He also worked in the estimating and general engineering division, after which he was placed in a managing and executive capacity until he was transferred to the purchasing department.

J. F. Bechtle

• • •

H. J. STIMSON, recently released from the Navy, and **O. E. STIMSON,** former construction superintendent with the War Emergency Pipe Line Company, have organized the Houston firm of Stimson & Stimson, consulting engineers. Prior to his release from the Navy, H. J. Stimson was in the assistant industrial manager's office, San Pedro, Calif. Before the war, he was an exploitation engineer with Shell Oil Company. His brother, O. E. Stimson, was a former operating superintendent for the Texas Pipe Line Company, which he served for 20 years.

• • •

NICHOLAS A. ROSE, formerly with the United States Geological Survey, division of ground waters, has joined the firm of Lockwood and Andrews, consulting engineers, as an engineering geologist.

• • •

DR. JOHN W. VANDERWILT, consulting geologist of Denver, has been named to direct a study of the mineral resources of Colorado.

• • •

H. H. KAVELER, petroleum engineer of Phillips Petroleum Company, discussed "More Efficient Operations of Oil Pools," before a meeting of the oil and gas division of the Oklahoma City Chamber of Commerce, February 11.

• • •

J. E. AUSTIN of the Oklahoma Natural Gas Company, has been elected 1946 president of the Oklahoma Oil Scouts Association.

• • •

R. H. ALAGOOD has been appointed district manager of the new land and geological offices of the Sunray Oil Corporation in San Antonio, and **FRANK BOWSER** has been named to head the new West Texas District office in Midland.

• • •

VIRGIL STOVER of Tulsa has been appointed manager of the new industrial sales division of the Buda Engine Sales and Service, Inc., Tulsa. For the past year he has been sales engineer for the company, working in Tulsa.

• • •

JACK GREEN has been appointed sales manager of the welding fittings division, and **TOM PIKE** becomes assistant sales manager of the same division, for Tube Turns, Louisville. Green was formerly with the American Radiator and Standard Sanitary Corporation as a branch manager. He became affiliated with Tube Turns in 1941. He was stationed in Chicago, as district manager, before becoming the division assistant sales manager in 1943. Pike was associated with Republic Supply Company of California, and also W. R. Guiberson Company, before taking over management of Tube Turns' Los Angeles office in 1940. He subsequently became district manager in charge of the West Coast territory.

Jack Green

PAUL E. TALIAFERRO, a former vice president of Sunray Oil Corporation and recently discharged from the Army with the rank of major, has been elected vice president and general attorney for Sunray, to serve until the next election of offiers.

• • •

JOHN H. WILSON, representative of the Independent Exploration Company, was elected president of the Fort Worth Geological Society, succeeding **TOM L. ROMINE,** Sinclair Prairie Oil Company. **ED. M. ROWSER,** The Texas Company, and **S. K. VAN STEENBERGH,** Sinclair Prairie Oil Company, were chosen vice president and secretary-treasurer, respectively.

• • •

W. E. LEE, formerly of Los Angeles and a sales engineer in the mining industries for the Westinghouse Electric Corporation, has been named manager of the company's Phoenix, Ariz. office. Lee joined Westinghouse 1936.

• • •

DR. E. R. WEIDLEIN, Pittsburgh, director of the Mellon Institute of Industrial Research, will speak at the spring quarterly meeting of the Interstate Oil Compact Commission in Tulsa, April 11 to 13.

• • •

JOHN S. CHICK of Tulsa has been appointed representative in the Mid-Continent oil territory for Oshkosh Motor Trucks, of Oshkosh, Wis. Chick has spent 15 years in the oil country in production and drilling, petroleum engineering and sales and service engineering. He will have headquarters in Tulsa and will set up a parts and service department as soon as office and warehouse space can be located.

John S. Chick

• • •

RAY G. NOBLE has returned as advertising manager for Union Wire Rope Corporation after three years with the Army. He had been with the corporation five years before joining the service.

• • •

FRED D. LIVINGSTON has recently returned as Sales Manager of the R. H. Sheppard Co., Inc., of Hanover, Pa. In 1943 Livingston took leave of absence from Sheppard to serve in the Navy.

• • •

PALMER A. DOLPH has been elected vice president of Continental Motors Corporation, Detroit, to fill the position of assistant sales manager of the automotive and transportation engine division.

• • •

A. G. KOENIG has been named general sales manager of the Tagliabue Instrument Division of The Portable Products Corporation, succeeding **E. D. WACKER,** who becomes general manager. Koenig has been with the Tagliabue organization since 1928, when he was made southwestern manager with headquarters in Dallas.

• • •

E. B. POOL has been appointed by Edward Valves, of East Chicago, Ind., to conduct a new type of valve research work. He will specialize in stress and strain experiments and pioneering investigations in flow characteristics and pressure drop in addition to other mechanical and metallurgical research.

• • •

MARVIN M. DONAHO has been released from the Navy and has resumed his former position as general office manager in the Fort Worth office of The Smith Contracting Company. Donaho spent the last 20 months in the supply department of the Navy. Originally of Del Rio, Tex., he resides in Fort Worth.

Marvin A. Donaho

STUART E. CORRY has been appointed sales representative of the Franks Manufacturing Corporation of Tulsa in Illinois, Indiana, Michigan and the western portion of Kentucky. He will maintain offices at Fairfield, Ill. Corry went to Franks in 1943 from the Spartan Aircraft Company. Previously, he held engineering positions with the Texas Electric Service Company and The American Manufacturing Company of Texas. During his work as chief draftsman with Franks, Corry helped develop the present standard line of oil field equipment with particular assistance in development of a new clutch.

Stuart E. Corry

• • •

E. HASTINGS ACKLEY, patent and legal attorney for Otis Pressure Control, Inc., and Otis Engineering Corporation, has opened private offices in Dallas. Ackley was employed by Otis Pressure Control, Inc., in 1937 to handle patent work and also served as a draftsman and engineer. He will continue to serve Otis as patent attorney, in addition to other clients.

• • •

WALTER H. COX has been appointed sales manager for Connor Tank Company, Casper, Wyo. He is a native of Parkersburg, W. Va. After seventeen years with Oil Well Supply Company he worked out of Pittsburgh and New York City six years representing Lee C. Moore & Company.

• • •

FREDERICK C. LUDINGTON has been appointed manager of the switchgear and control sections of Allis-Chalmers, Milwaukee. He joined the company in 1923, and has been acting manager of the switchgear and control sections since July.

• • •

ROLAND A. SHERWOOD has been appointed assistant to the president, American Locomotive Company, New York. He joined the company in 1939 and became assistant to the executive vice president in September.

• • •

W. A. FINN was appointed export manager of Worthington Pump and Machinery Corporation upon his release from the Navy. He succeeds **GEORGE GELLHORN,** who has become general manager for **C. E. HALABY,** one of Worthington's industrial machinery dealers in Colombia, South America.

• • •

A. J. ROD has been appointed district manager of the Houston branch of Carboloy Company, Detroit. Houston is headquarters of a new southwestern district.

• • •

EARL REES has become associated with Patterson-Ballagh Corporation, as a California representative, with headquarters in Los Angeles. He formerly was with Republic Supply Company of California. During the past four years he has been in the Marine Corps.

• • •

JOSEPH F. UNDERWAY has been appointed sales representative for American Foundry Equipment Company, of Mishawka, Ind., in the Gulf Coast district, with headquarters in Houston. He was formerly field manager of East Texas Electric Steel Company, Longview.

• • •

H. V. HUEPPELSHEUSER of the George E. Failing Supply Company has left for Turkey, where he will take charge of a training program for the Turkish government. The company is supplying drilling equipment to Turkey for an extensive program of exploration for oil and water bearing sands. Failing is supplying 11 drills for the program, and Hueppelsheuser will train crews to operate this equipment.

H. V. Hueppelsheuser

MEN IN THE INDUSTRY NEWS

FRANK POGOLOTTI, a member of the Caterpillar Tractor Company organization since 1931, has resigned as supervisor of engine sales in the export sales department to become company manager and chief engineer of Mexico Tractor and Machinery Company, "Caterpillar" distributor with headquarters in Mexico City. J. A. **GIBB,** assistant export manager of "Caterpillar," has assumed direct supervision over export engine sales, in addition to his other duties.

Frank Pogolotti

* * *

G. W. DAVIDSON has been appointed sales manager for W. C. Norris, Manufacturer, Inc., Tulsa. Davidson has been with the organization ten years. He served as sales representative for the firm in East Texas, Kansas and Illinois and has been in charge of Tulsa city sales.

* * *

E. W. BROCKMAN has been appointed representative in Tulsa for the Rector Well Equipment Company of Fort Worth, and has opened offices in the Thompson Building. Before the war Brockman was sales engineer for the company and manager of the Oklahoma and Kansas district.

* * *

RALPH A. POWERS has been named engineer-in-charge of electronic engineering at the Allis-Chalmers Manufacturing Company. Powers, who holds numerous patents on electronic devices and has prepared more than a score of technical papers for trade groups and publications, formerly was with the Bundy Tubing Company, Detroit. He succeeds **J. M. CAGE,** resigned

* * *

JACK A. DOLMAN has joined the staff of The Western Company, Engineered Acidizing, as a geologist. Dolman is a graduate of the University of Oklahoma with a degree in geological engineering, and was formerly with Tide Water Associated Oil Company in Midland, Tex., as assistant district geologist.

* * *

MAX J. PISCHKE, formerly Pittsburgh district sales manager, has been appointed manager of warehouse sales for Allegheny Ludlum Steel Corporation, Pittsburgh. Pischke, who will manage sales to all warehouses, jobbers, and distributors, joined Allegheny Ludlum in 1941, after eight years in the industrial supply field in Pittsburgh.

* * *

JIM DONELAN, with Core Laboratories, Inc., has been transferred from Dallas to Oklahoma City.

* * *

THOMAS E. KRANER has been appointed branch manager for Cooper-Bessemer Corporation at Caracas, Venezuela. He has been affiliated with the company since 1937.

* * *

FRED W. BUSH has been promoted from assistant to the manager to assistant manager of the electrical department of the Allis-Chalmers Manufacturing Company. A graduate of Georgia Tech, Bush started with the company in 1928 on the graduate training course and was made engineer's assistant in the electrical department in 1930. He became sales engineer in 1936 and in 1941 was named sales engineer-in-charge, transformer sales.

* * *

S. A. TENER has rejoined Robinson Packer Company in Tulsa after serving with the Seabees in the South Pacific. Tener, who has been with the firm for nearly 20 years, is in charge of packer sales and installations.

* * *

W. B. BLACKSTOCK of Phillips Petroleum Company has been presented the 1945 distinguished service award of the Bartlesville, Okla., Junior Chamber of Commerce.

* * *

DR. HAROLD W. SCOTT, associate professor of geology of the University of Illinois, Urbana, addressed the Oklahoma City Geological Society on "The Upper Paleozoic History of the Rocky Mountains and Adjacent Great Plains."

DR. CARL COKE RISTER, research professor on leave from the University of Oklahoma to write the history of the petroleum industry of the southwest, left Norman recently to tour the early oil centers in Texas. This history, a three-year job, is being written under a $15,000 grant from Standard Oil Company to the University of Oklahoma Foundation.

* * *

W. L. AINSWORTH has resigned as secretary and general manager of the Mid-Plains Oil Corporation, Wichita, Kan., and **FRANK A. OYSTER,** consulting geologist of Kansas and Texas has been named his successor. Ainsworth, who will retain his interest in the corporation, relinquished his position to spend more time on other interests.

* * *

A. B. COOK, engineer of the U. S. Bureau of Mines at the Bartlesville, Okla., experiment station, has been assigned to work with the conservation division of the Oklahoma Corporation Commission, in making bottom hole tests in Oklahoma oil fields. **DAN O. HOWARD,** geologist of the conservation department, is handling the work for the state.

* * *

LT. COL. H. H. ARNOLD, JR., who has recently returned to The Texas Company as general superintendent at Salem, Ill., has been presented the Legion of Merit for outstanding work with land mines and other ordnance work.

* * *

E. F. KINDSVATER has been appointed manager and **P. M. ARNOLD** assistant manager of the newly created chemical engineering department of Phillips Petroleum Company, Bartlesville, Okla. The chemical engineering operations of the company were formerly carried out by the personnel of the research and development departments.

* * *

K. T. WOODMAN, formerly a geologist with the Lion Oil Company, and **WALTER WILKINSON,** formerly with Phillips Petroleum Company, have been added to the Kansas geological staff of Sohio Petroleum Company.

* * *

R. J. EICHE, export representative, has opened a New York office at 30 Church Street under the management of **H. E. MALAND.** Maland is a charter member of the New York Chapter of Nomads, and for the past seven years has been connected with the Chicksan Company as New York Sales Manager. In addition to export representation, the New York office will also represent and direct sales and service for the Hamer Oil Tool Company for their eastern states division.

* * *

LOUIS M. FUNDERBURG, general operating manager, has been elected vice president of Universal Atlas Cement Company and will be in general charge of manufacturing operations with headquarters in New York.

Deaths

B. E. SIBLEY, 59, chief technologist for Continental Oil Company, died February 13 at Needles, Calif. He had been ill several months. Sibley went to Ponca City, Okla., in 1930 from Denver, where he was chief technologist in the marketing department at Continental. Born in Warsaw, Penn., he devoted much of his early life to the development of the automobile and was active in automobile racing circles. He joined Continental as a salesman in Colorado in 1912, and spent 17 years in direct sales work with that company before his appointment as chief technologist on September 1, 1929. He was very active in the development of fuels and lubricants for the War Department. In this capacity he was a member of the War Advisory Committee. He was also a member of the American Society of Mechanical Engineers.

* * *

GEORGE A. GAGE, 70, owner of the Economy Pump Company, died in Tulsa February 12. A native of Dover, N. H., Gage was associated with Oil Well Supply Company in Tulsa before establishing his own firm.

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CLEAN-OUT BAILER

The thousands of Mid-co Bailers in use throughout the World—The accomplishments of the operators using this Oil Well Clean-Out Tool—The inevitable repeat orders prove its superiority in Oil Well reconditioning.

The job to be done is never too tough for the sturdily built Mid-co Clean-Out Bailer—Manufactured from the best materials obtainable—Accurately machined and fitted with but one objective—TO CREATE THE MOST EFFICIENT OIL WELL CLEAN-OUT TOOL POSSIBLE.

G-Type is recommended when cleaning out or drilling by anything in the hole such as tubing, tools, etc.

FOR ADDITIONAL INFORMATION SEE COMPOSITE CATALOG PAGE 1903

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Petroleum Engineer

Sperry-Sun Well Surveying Company has immediate opening for a petroleum engineer experienced in high-pressure gas or oil production to take charge of a new service determining corrosion of tubing. Apply in person or write, giving qualifications and past experience.

Address: Sperry-Sun Well Surveying Company, 3118 Blodgett Ave., (P. O. Box 8008), Houston 4, Texas.

SALES MANAGER

Long established technical services company in Houston, Texas, has opening for a man with sound engineering and sales background who has held responsible sales executive position in the Gulf Coast or Mid-Continent with similar company. Must be capable of taking charge of sales and service, directing branch and district offices.

Write, giving outline of education and practical experience, as well as salary expectations. Letters received will be treated confidentially.

Address: Box 78-OW,
c/o The Oil Weekly, Houston, Texas.

E. L. Decker Becomes Head of Firm as W. R. Martin Retires

Martin - Decker Corporation, Long Beach, Calif., announces that W. R. Martin has disposed of his interest in the concern and is retiring from active participation. E. L. Decker becomes president and sole owner. There will be no change in company name or in the policies of the organization.

E. L. Decker W. R. Martin

Martin and Decker joined in forming the company 17 years ago. Martin has been connected with the industry 67 years, starting as a boy of 8 tending his father's three stripper wells in Pennsylvania. He is reputed to be the oldest oil man in California in point of service. In recent years he has acquired newspaper interests and has given much of his time and energy to harbor development.

Decker was founder and first president of the Nomads. He helped organize and is president of Equestrian Trails. He is also vice president and director of the Long Beach Chamber of Commerce.

Diesels to be Produced at New International Harvester Plant

International Harvester Company will use the former Buick aviation engine plant at Melrose Park, Chicago suburb, for expanded production of its industrial power line of products, it was announced by H. T. Reishus, general manager of the company's industrial power division. The greater portion of the plant's 1,200,000 square feet of manufacturing floor space will be used for the production of diesel motors. These motors will power the company's line of crawler tractors, and others are sold to manufacturers of equipment who use the Harvester motors to power their machines.

In addition to the diesel motors, a 65-horsepower gasoline engine, a large new model of crawler tractor—the TD-24—and a full line of stationary power units will be made in the plant, Reishus said. It is possible the company may also use parts of the plant for other purposes.

The diesel motors to be built at the plant will range in size from engines of 35 horsepower up to large units of 200 horsepower. The large new crawler tractor to be built at the plant will be the largest tractor of any type built by Harvester, with 130 horsepower at the drawbar and weighing 18 tons.

Gwilym A. Price Is President Of Westinghouse Electric

Gwilym A. Price has been elected president of Westinghouse Electric Corporation, succeeding George H. Bucher, who resigned recently. Under a recent amendment to the by-laws of the corporation, Price as president will also be the chief executive officer.

At the age of 50 Price is one of the country's youngest directing heads of a major corporation. He was elected a vice president of Westinghouse in September, 1943, and had been executive vice president since May, 1945. He was elected a member of the Corporation's Board of Directors in January, 1945.

Prior to his election as an officer of Westinghouse, Price had been president of the Peoples-Pittsburgh Trust Company of Pittsburgh, since January, 1940, following three years as its vice president in charge of trusts. He had served as a trust officer since 1923 and as a vice president of the Bank since 1930.

A. W. Robertson, who as chairman has been the corporation's chief executive officer since 1929, has reached retirement age. He was elected chairman of the Westinghouse board of directors under the new bylaws and will continue as a member of the Westinghouse organization in a less active capacity.

Reams Supply Firm Formed; Office Opened at Alice, Tex.

Henry E. Reams of Corpus Christi, Tex., has organized the Reams Supply Company, and has opened a warehouse and office at Alice, Tex., on the San Diago highway.

The firm will be a distributor for the following manufacturers in South Texas territory: The Brewster Company, inc., Web Wilson Oil Tools, Manhattan Rubber Company, Wickwire-Spencer Steel Company, Waukesha Motor Company, Continental Motor Corporation, Mission Manufacturing Company, Hacker Machinery & Supply Company, Kinzbach Tool Company, Inc., Texas Iron Works, and Acorn Refining Company.

Durabla Manufacturing Firm Moves Valve Plant

The Durabla Manufacturing Company has moved its valve plant from the former location in Berwyn, Pa., to a new building at Wayne, Pa.

The new plant has been laid out with special reference to easily accessible storage of raw materials and component parts; efficient routing through assembly and machining areas; and carefully arranged assembly areas.

1—Mud Mixer

Mid-Continent Supply Company announces the "Muderator," a device for mixing mud entirely by means of a vacuum created by the passage of drilling mud from the circulating pump. The outfit operates from the pressure of the main circulating pump or from a stand-by pump.

The device is set up at the rig by running a 2-inch by-pass line from the circulating pump and connecting it to the 2-inch wing union on the Muderator. Then a 4-inch exhaust line is laid from the Muderator to the mud pit so that it will discharge into the pit near the pump suetion.

The flow of light mud through the Muderator is started by opening the valve in the by-pass mud line. Then the vacuum control valve is opened ¼ to break the vacuum and create a flow of air through the mixing chamber. Dry mud is then poured into the hopper. The control valve on the pick-up nozzle is opened ¼ to ½, and the nozzle pushed deep into the hopper. The rate of intake of the dry mud is regulated by the control valve on the pick-up nozzle. To increase the intake, the valve is opened wider.

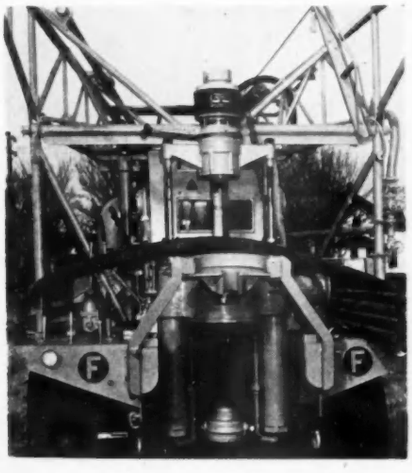
It is said that 100 pounds of weight material can be handled in from one to 1½ minutes by using the 7/8 jet with the pick-up nozzle control valve wide open.

When necessary to mix bulk material, the hopper may be quickly screwed onto the top of the vacuum chamber. If desired, dry mud may also be fed into the mixture by attaching the suction hose to the vacuum control valve and inserting the pick-up nozzle into dry mud.

(Check item 1 on coupon for more information.)

2—Swinging Spider

George E. Failing Supply Company has developed a swinging spider arrangement on portable drills for holding the drill pipe while making up or breaking out. The spider is designed to han-



dle up to 400 feet of drill pipe and is a time saver since it eliminates the need for leveling or aligning.

The spider frame is fastened permanently by a hinge to the bed of the truck. It locks down in place for drilling operations or locks up for road travel. The spider bowl is also hinged and swings horizontally away from the hole easily and quickly while drilling or setting large diameter surface pipe.

The spiders are listed as optional equipment on drill models 314, 314-C and 1500.

(Check item 2 on coupon for more information.)

3—Sealing Compound

Parker Appliance Company, announces a general-purpose thread and gasket sealing compound, to be known as UNISEAL.

It is claimed that this product produces a highly efficient seal which is proof against air, water, steam, gas, gasoline, oil, hydraulic fluids, and the aromatics.

The compound is a paste of uniform consistency, containing no free metallic particles or other additives subject to washing out. The paste flows smoothly to form ribbon gaskets, and blends readily with cut gasket material.

(Check item 3 on coupon for more information.)

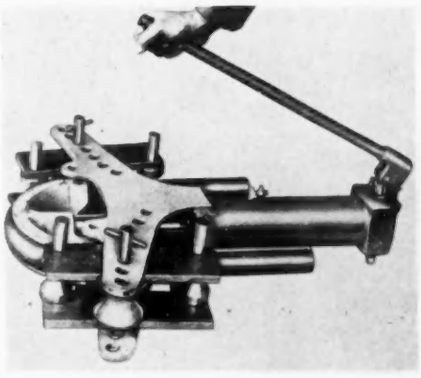
4—Paint

Peninsular Chemical Products Company, has developed a chemical-resistant maintenance paint, known as Pen-Kote 500. The paint is described as a quick-drying, odorless protective coating that can be applied readily to heated, wet, and porous surfaces of all kinds. Because of its high solids content, a single coat often gives satisfactory protection, and two coats are said to be sufficient under the most adverse conditions. The material is as free-working as ordinary house paint, and applies easily. It sets in 30 minutes or less, to a hard, but flexible film of plastic. Surfaces to be painted need not be dry or extra clean. All materials, wet or dry, including wood, metal, brick, concrete, wallboard and previously painted surfaces, can be converted with equal ease and effectiveness.

(Check item 4 on coupon for more information.)

5—Bending Machine

Tal's Prestal Bender has announced the development of a new attachment for its portable bending machine that will bend any wrought iron or steel pipe of 3/8-inch to 2-inch diameter, to 180 degrees in one operation.



No stopping of the machine to move or shift the pipe is necessary.

(Check item 5 on coupon for more information.)

Use This Convenient COUPON for Additional Information

Check below the numbers identifying items on which you want additional information. Mail coupon to The Oil Weekly and your request will be forwarded to the manufacturer.

THE OIL WEEKLY
P. O. Box 2608, Houston 1, Texas, U.S.A.

Please have manufacturers send me, without obligation, more information on items shown in February 18 issue of The OIL WEEKLY as checked below:

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

In addition to information checked above, I would like more data on products or services advertised elsewhere in this issue by_____ Company

Name_____ Title_____

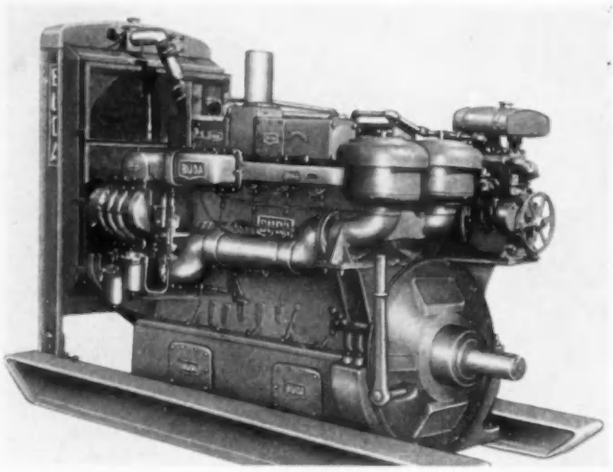
Company_____

Address or P. O. Box_____

City_____ State_____

(To avoid delay PRINT or TYPE clearly name, company and mailing address)

6—Diesel Engine



The Buda Company has perfected a supercharged diesel engine for oil field drilling. It is a six-cylinder engine with 6¾-inch bore, 8¾-inch stroke, and 1879 cubic inches displacement.

The engine is vertical type, overhead valve, four-cycle, full diesel, supercharged. The crankshaft is drop forged from open hearth steel and heat treated. Crankshaft bearings are steel-backed, replaceable, precision type. Cylinder liners are replaceable, wet sleeve type, with ground finish. The camshaft bearings are steel-backed, babbitt lined, precision type and pressure lubricated.

Connecting rods are drop forged of alloy steel—heat treated and carefully balanced in sets, and rifle drilled for pressure lubrication to piston pin. Connecting rod bearings are steel-backed, precision type.

Capacity of the cooling system is 33 gallons, with a radiator capacity of 17 gallons. There is a centrifugal water pump, driven from the accessory drive shaft, with pump shaft of alloy steel. The pump runs at 1½ times the speed of the engine.

Crankcase and cylinder castings are of chrome nickel iron, and are in one casting. The governor is of the flyball type, variable speed, driven from the rear of the fuel injection pump.

A full circulating pressure lubrication system is provided to force oil under pressure to all crankshaft bearings, camshaft bearings, connecting rod bearings, timing gears and rocker arms. Lubricating oil capacity of the cast iron base is 23 gallons.

The oil pump is gear type, driven from the timing gear train, and is accessible from the outside of the engine.

The power takeoff equipment consists of a dry disc clutch for direct connection, pinion, chain sprocket, with a flat belt of "V" belt drive.

All fuel and lubricating oil to the engine passes through ample size filters, readily accessible from the outside for cleaning.

The supercharger is belt-driven, positive displacement, with helical form rotors.

(Check item 6 on coupon for more information.)

7—Discharge Valve

J. A. Zurn Manufacturing Company, has developed a discharge valve designed to give positive protection against backsurge of discharge lines carrying steam, sludge, waste water and

other waste liquids in gravity flow installations.

In order to assure non-fouling of the valves, these units have a swing check flap suspended from a full floating pin fulcrum to insure positive full surface contact between ground face of flap and flap seat.

The knob in the center of the top surface of the swing check flap contacts the valve body roof at only one point when the swing check flap is wide open. This prevents the swing check flap from touching the sides of the valve body and assures free operation of the swing check flap. Location of swing check flap in relation to interior of valve body provides ample protection against sediment blocking of the valve. Swing check flap suspended from cover can easily be removed, and replaced.

Discharge check valves may be operated with or without a manual control or with an extension shaft or flexible cable from an access box. The units are hydrostatically tested. Flanges are 150-pound flat faced and blank or drilled as specified. They are available with 180°, 105° or 90° bodies made of cast bronze, steel, semi-steel, cast iron and alloyed metals for corrosion resistance.

(Check item 7 on coupon for more information.)

8—Fire Control Nozzle

Blaw-Knox, Sprinkler Division, Pittsburgh, Pennsylvania, has developed a fire control nozzle for fixed installations. The nozzle produces a fog which stifles fire by forcing water through three clear spiral passages and a clear central passage in the head of the nozzle.

The fog pattern, on which the effectiveness of the nozzle depends, is maintained even at greatly reduced water pressures, thus assuring an efficient fog under widely varying conditions.

(Check item 8 on coupon for more information.)

Use the Coupon

For free copies of Manufacturers' Literature or more information on products described on these pages, use the convenient mailing coupon on page 69.

Literature

9—Gears

Foote Brothers Gear and Machine Corporation has published a booklet, "Power Units 'A-Q' Gears." The publication illustrates and describes a number of power units which were developed to meet specific requirements, using aircraft quality gears. These units are capable of performing many jobs, either by direct or remote control.

(Check item 9 on coupon for more information.)

10—Maintenance, Cleaning

Oakite Products, Inc., has published a booklet, "Digest of 88 Maintenance, Cleaning and Related Jobs," for executives, superintendents and foremen. The operations mentioned are all related to the producing, refining and marketing divisions of the oil industry.

The digest presents, through tested procedures supplemented by drawings and blueprints, methods and materials for holding varied maintenance cleaning, degreasing, descaling and other jobs. Each subject is treated individually with practical materials and method recommendations made in every case.

(Check item 10 on coupon for more information.)

11—Cast Iron Cutting

The Technical Service Department of National Cylinder Gas Company has issued an illustrated circular covering the "how to" on the cutting of cast iron with the oxy-acetylene flame.

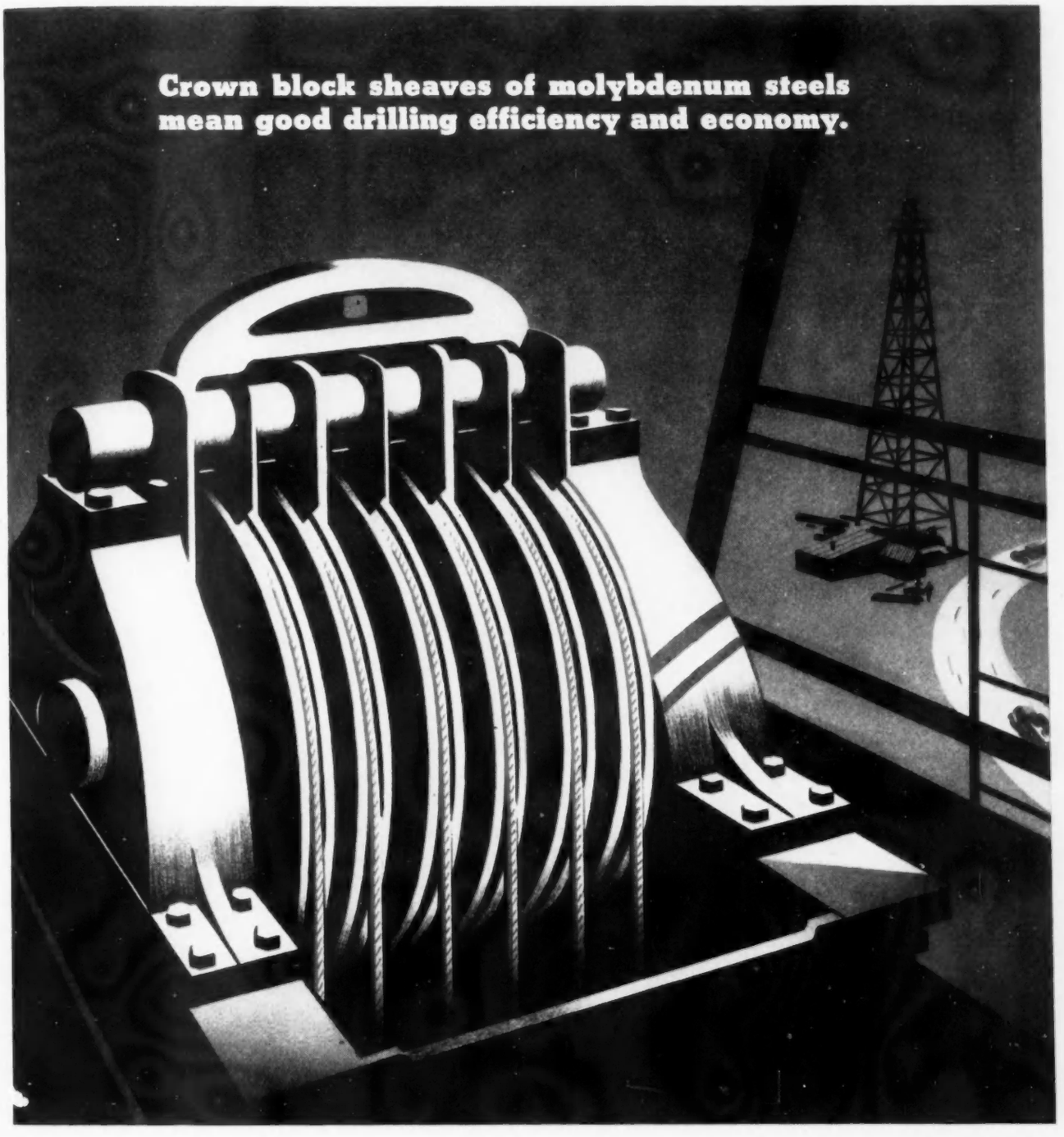
Included is discussion of proper types of equipment, preheating conditions, cutting positions, need of adequate protective clothing, proper oxygen and acetylene pressures, etc.

(Check item 11 on coupon for more information.)

12—Motors, Generators

Electric Indicator Company, has published a booklet on precision fractional horse-power motors and generators. Construction and characteristics of all types are given, and performance curves shown for the typical units selected. Standard dimensions and cut-away views are shown for engineers' interest and convenience.

(Check item 12 on coupon for more information.)



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Test Runs Being Made on Texas Repressuring Plant

C. V. Lyman, Midland, Tex., producer, is making test runs of the completed portion of his 15 million-foot daily capacity natural gasoline and repressuring plant in the Emperor Deep field, Winkler County sector of West Texas.

The residue gas will be sold on contract to the El Paso Natural Gas Company, which has extended its Jal-Keystone system, using 12.6 miles of combination 5½ and 6⅝-inch pipe, to the plant. Natural gasoline and other products produced by the plant will be sold to the Standard Oil Company of Texas' El Paso refinery, with the Pasotex Pipe Line Company serving as the transporter.

Considers Diminishing Oil Supplies Disturbing

There is available evidence which indicates that reserves of oil in this country either are not adequate in size, or, if adequate, cannot be discovered rapidly enough to maintain the voluminous flow of low-cost products that prevailed before the war. Such is the opinion of Walter H. Voskuil, mineral economist of the Illinois State Geological Survey, at the University of Illinois. Reserves may decline, he says, and he believes it unwise to leave to chance the question of an adequate supply of a material so vitally necessary for a productive economy and for national security.

Voskuil's analysis is presented in a bulletin as the third in a special series of business studies being released by the University's Bureau of Economic and Business Research.

Reserves as indicated by available evidence will govern the nature of the oil policy that will be formulated for the United States, he believes.

In contrast to the opinions of those who believe there are adequate reserves, Voskuil cites the 1938-1944 period when new discoveries fell below annual requirements considered at a peacetime level. There have been other unfavorable periods, he also points out, but not for so prolonged a time, and even in view of wartime curtailments, he considers the diminishing discoveries disturbing.

"A diminishing oil supply," he declares, "should be viewed as more than a temporary shortage occasioned by the tremendous demands of the invasion forces, more than a question of differences in point of view of major producers versus independents, of the advocates of a self-contained industry versus those who favor development of foreign sources. The continued functioning of the economic structure of the United States is at stake."

Surplus Tank Barges to Be Offered at Fixed Prices

Wooden and steel tank barges, tugs and other craft declared surplus in large quantities by the armed services will be sold by the Maritime Commission at fixed prices after the market has been tested through competitive bids.

The first offering under the new fixed-price system will include 39 169-foot DPC wooden tank barges located at Palatka, Fla., offered at $3150 each; three 85-foot harbor single-screw tugs located at Jacksonville, and 23 located at Madisonville, La., offered at $80,000 each, and 80 195-foot steel tank barges located at Logtown, Mississippi, and 11 located at Pearlington, Miss., offered at $21,000 each.

Offers for any of these vessels should be submitted to the Secretary, U. S. Maritime Commission, Washington 25, D. C.

Gasoline Tax Hiked

An additional 1-cent per gallon tax on gasoline sold in Kansas will go into effect March 1, following the signature of the certification papers by Gov. Andrew Schoeppel. The new tax will bring the total gasoline tax to 4 cents per gallon and was authorized by the legislature last year. Governor Schoeppel's certification approved a resolution passed last month by the Kansas State Highway Commission which stated that the new tax would be needed to match federal aid funds now available for secondary road construction in Kansas.

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